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BLUE BOOK

1944

for manufacturers and distributors of

SOAPS
INSECTICIDES
DISINFECTANTS
CHEMICAL SPECIALTIES
SANITARY SUPPLIES
POLISHES
CLEANERS

Issued Annually by the Publishers of

SOAP AND SANITARY CHEMICALS

NEW YORK

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by
MacNAIR-DORLAND CO.

Maintain the quality of your soap odors

Write for the complete list of available Du Pont Aromatics. Among the many recommended for soap, and now available, are the following:

ALPINE VIOLET
(CYLAMEN ALDEHYDE)
BENZYL PROPIONATE
CEDROL
CINNAMIC ALDEHYDE
COUMARIN FINE CRYSTALS
DIMETHYL HYDROQUINONE
HYACYLENE S
HYDROXYCITRONELLAL SUBSTITUTE
INDOLE
ISO AMYL BENZYL ETHER
ISOBORNEOL
ISOBORNYL ACETATE
METHYL ANTHRANILATE
METHYL RHODIONE AND RHODIONE
MUSK XYLOL
RHODINOL P
TERPINEOL, EXTRA
TERPINOLENE
TERPINYL ACETATE
TERPINYL PROPIONATE
COMPOUNDS FOR SPECIAL ODORS

HOW DO the trade and the public identify your soap? By its name and wrapper, shape, size and color. Yes, and by its odor.

That's why it's so important to maintain consistent quality and continuity in your soap odors.

Despite wartime shortages, Du Pont Aromatics Chemists can help you solve this problem. They have the knowledge and the technical facilities to help you carry on the high standards of your products.

So turn to Du Pont for help on your soap perfume problems. Let our skilled chemists and perfumers adapt available supplies to your needs.

Synthetic aromatics are a product of chemistry, and Du Pont Synthetic Aromatics reflect the technical skill of all the Du Pont laboratories. E. I. du Pont de Nemours & Co. (Inc.), Aromatics Section, 40 Worth Street, New York.

DU PONT

Aromatics

Better Things for Better Living . . . *Through Chemistry*

BLUE BOOK

1944

AN ANNUAL BUYERS GUIDE,
DIRECTORY AND REFERENCE
VOLUME FOR MANUFACTURERS
AND DISTRIBUTORS OF SOAPS,
INSECTICIDES, DISINFECTANTS,
POLISHES, CLEANERS AND
ALLIED CHEMICAL SPECIALTIES

Sixteenth Edition

ISSUED ANNUALLY BY

MacNair-Dorland Company

254 West 31st Street New York, N. Y.

SR668.1 S67
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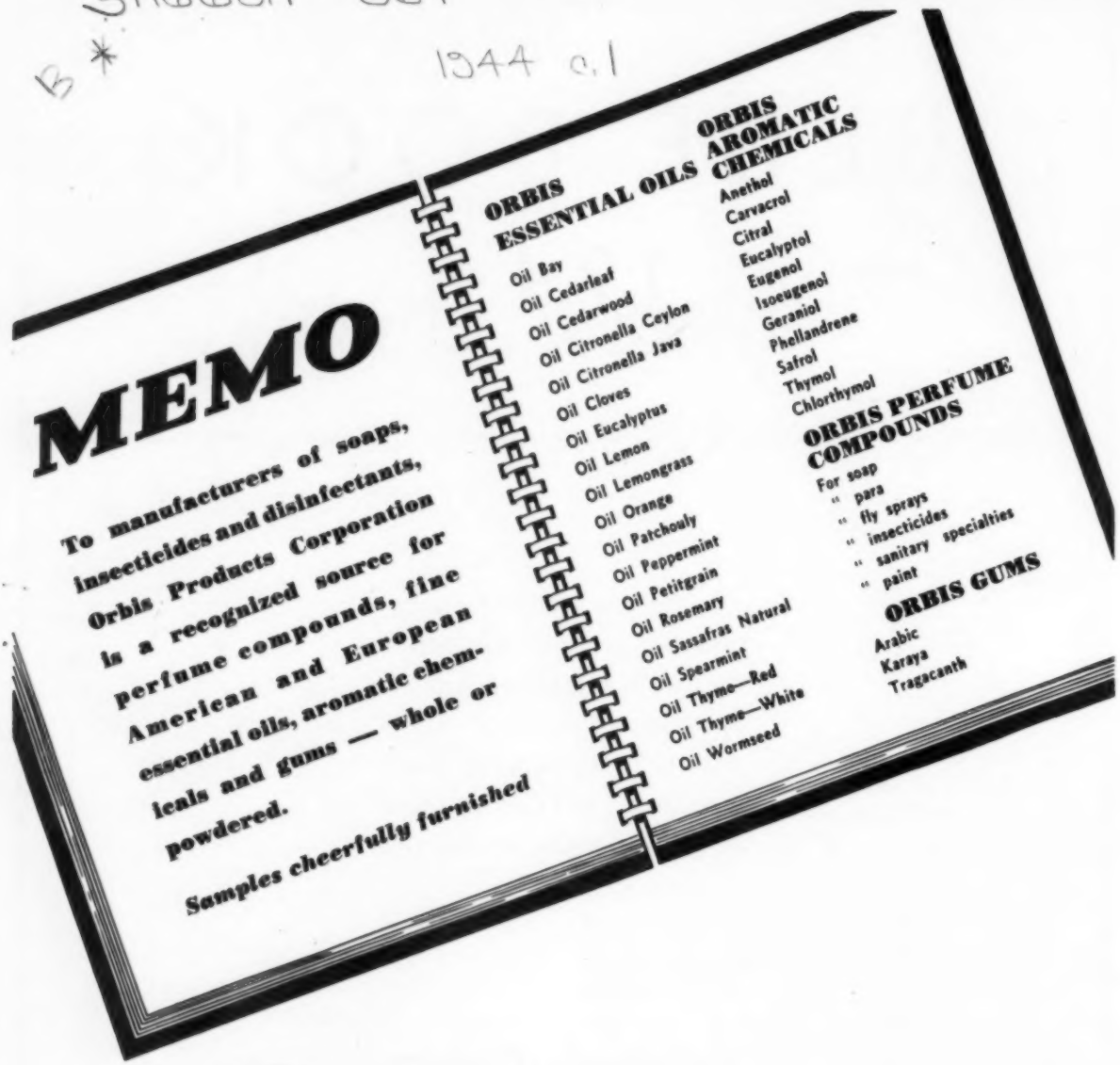

ORBIS

PRODUCTS CORPORATION

215 PEARL STREET, NEW YORK - FACTORY & LABORATORY, NEWARK, N.J.

CHICAGO
660 North Dearborn St.

PHILADELPHIA
610 Brown Bldg.

BOSTON
89 Broad Street

MEMPHIS, TENN.
1620 Carr Ave.

Water Soluble Gums	Waxes	Cosmetic Raw Material	Fruit Flavors
Filter Paper	Stearic Acid	Oleo Resins	Food Colors
Aromatics	Essential Oils	Perfume Bases	Quince Seed
Rice Starch	Zinc Oxide French	Olive Oil	Irish Moss

Tech g. cont

Foreword

DEPENDABLE buying information has become more important than ever under the influence of war-time conditions of supply. At the same time, such information has become more difficult than ever to assemble. In the case of many items listed in this edition of the BLUE BOOK, we have had to be content with listing firms who are logical sources of supply in normal times, or firms who should logically be able to supply the desired product if available at all.

The physical character of this year's BLUE BOOK also reflects changes due to the war. Gone is the plastic binding and the heavy cover which formerly protected the contents of each issue. Lighter weight paper has been substituted for the body of the book. None of the changes would have been made in normal times, but under today's conditions we have had no choice.

Adherence to our regular publishing date of former years, and saving of paper and production time have been the determining factors. We have tried as far as possible to make our listings complete. No recognized supplier has been deliberately overlooked or his listings omitted. It is inevitable, of course, that some mistakes have occurred, and if you find that your own listings are incomplete, write now to advise us so that this can be remedied in next year's BLUE BOOK.

A special explanatory note may be necessary on the listings of suppliers of finished products,—bulk and private brand soaps, and sanitary products. The BLUE BOOK listings are not intended to be **complete** lists of all manufacturers of such finished products, but are planned to be limited only to firms specializing in bulk and private brand sales. Wherever possible we have eliminated from the listings the names of manufacturers whose sole concern is the sale of such products direct to users.

THE PUBLISHERS.

March 30, 1944.

JUN 23 '44

McCormick Insecticides

These packaged products are offered subject to availability of supplies, and to wartime restrictions on the sale of pyrethrum, rotenone and other essential ingredients. Products available at the time of publication of this book are marked with an asterisk (*).

* **BEE BRAND INSECT SPRAY:** An excellent spray, highly effective against flies, mosquitoes and other household insects.

BEE BRAND INSECT POWDER: Pure, finely ground pyrethrum powder for household use, or for mixing horticultural dusts.

BEE BRAND INSECTICIDAL SHAMPOO: Kills fleas and lice on dogs and cats—head lice and crab lice on humans.

BEE BRAND FLEA POWDER: Active derris derivatives with a clay base, for control of fleas and lice on animals.

BEE BRAND ANT POWDER: A specially compounded derris powder for control of garden ants and certain other insects.

* **BEE BRAND ROACH KILLER:** Highly effective for household and institutional use. To be used only as directed on package.

BEE BRAND WARBLE FLY TREATMENT: A specially compounded derris powder for treatment of Warble or Heel Flies on cattle.

* **BEE BRAND DISINFECTANT:** A highly efficient disinfectant, deodorant and fungicide. Phenol coefficient — 8 F. D. A. method.

* **RED ARROW GARDEN SPRAY:** A highly concentrated Rotenone-Soap Spray. Now sold for use on food crops only.

"SPECIAL" RED ARROW SPRAY: An extra-high-powered pyrethrum spray for Japanese Beetles, Leaf Tyers and Leaf Rollers.

McCormick & Co., Inc.

BALTIMORE 2, MARYLAND

Buyers' Guide Section

LISTING SOURCES OF SUPPLY FOR RAW MATERIALS, MACHINERY AND EQUIPMENT BOUGHT BY MANUFACTURERS OF SOAPS AND SANITARY CHEMICALS.

●

Included in this section are the names of manufacturers of soaps and sanitary chemicals who sell private brand and bulk products to jobbers and distributors. It is not intended to list concerns who sell direct to consumers.

FORTY EIGHT YEARS *a Leader*

For more than forty-eight years the name of Chuit, Naef has been synonymous with the production of the highest quality group of synthetic and aromatic chemicals obtainable. Today, as then, this reputation continues unmatched. ✓ ✓ Throughout these years the Chuit, Naef organization has expanded its products to the point where they now rank as the most complete line of perfume raw materials available to the toilet goods, perfume extract and soap fields. ✓ ✓ As sole United States agents, let us convince you of the remarkable adaptability of our products to your line — *and our ability to deliver!*

Firmenich + Co.

135 FIFTH AVENUE, NEW YORK, N. Y.
CHICAGO OFFICE: 612 N MICHIGAN AVENUE

FIRMENICH

ABRASIVES AND FILLERS (Pumice, Silica, Feldspar, Clays, etc.)

American Colloid Co., 363 W. Superior St., Chicago
Aluminum Co. of America, Gulf Bldg., Pittsburgh, Pa.
California Industrial Minerals Co., Friant, Calif.
Chas. B. Chrystal Co., 16 Hudson St., N. Y.
Dicalite Co., 120 Wall St., N. Y.
A. C. Drury & Co., 219 E. North Water St., Chicago
K. F. Griffiths Co., 110 E. 42nd St., N. Y.
Goris & Arnstein, 1207 W. 37th St., Chicago
Hammill & Gillespie, 225 Broadway, N. Y.
Johns-Manville Corp., 22 E. 40th St., N. Y.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
Nature Minerals Co., 108 W. 6th St., Los Angeles
Philadelphia Quartz Co., 125 S. 3rd St., Phila.
Pumice Corp. of America, Grants, N. M.
Jas. H. Rhodes & Co., 157 W. Hubbard St., Chicago
Wm. R. Rogers, 44 Woodman St., Lynn, Mass.
L. A. Salomon & Bro., 216 Pearl St., N. Y.
F. E. Schundler & Co., Inc., 524 Railroad St., Joliet, Ill.
A. E. Starkie, 5461 W. Division St., Chicago
Tamms Silica Co., 229 N. La Salle St., Chicago
Whittaker Clark & Daniels, 260 W. B'way, N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.

ACETONE

(see also Dealers)

Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Cliffs-Dow Chemical Co., Marquette, Mich.
Commercial Solvents Corp., 17 E. 42nd St., N. Y.
E. I. Du Pont de Nemours, Wilmington, Del.
Wm. S. Gray & Co., 342 Madison Ave., N. Y.
R. W. Greeff & Co., 10 Rockefeller Plaza, N. Y.
Shell Union Oil Corp., 100 Bush St., San Francisco
U. S. Industrial Chem., Inc., 60 E. 42nd St., N. Y.

ACIDS (Sulfuric, Muriatic, Nitric, Acetic, Etc.)

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Atlas Powder Co., Wilmington, Del.
Blockson Chem. Co., Joliet, Ill.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
General Chemical Co., 40 Rector St., N. Y.
Hercules Powder Co., Wilmington, Del.
Hooker Electrochemical Co., Niagara Falls, N. Y. (Muriatic)
Innis, Speiden & Co., 117 Liberty St., N. Y.
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Victor Chemical Wks., 141 W. Jackson Blvd., Chicago
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

ACTIVATED CARBONS, see BLEACHING EARTHS, DECOLORIZING CARBONS

ADHESIVES

Arabol Mfg. Co., 110 E. 42nd St., N. Y.
Armour Glue Wks., 1355 W. 31st St., Chicago
Carbide & Carbon Chem. Corp., 30 E. 42nd St., N. Y.
Casein Co. of America, Bainbridge, N. Y.
Dennison Mfg. Co., Framingham, Mass.
Diamond Alkali Co., Standard Silicate Div., 535 Smithfield St., Pittsburgh
E. I. Du Pont de Nemours & Co., Wilmington, Del.
W. H. Gage Glue Co., 19 S. Main St., St. Louis
General Chemical Co., 40 Rector St., N. Y.
Hercules Powder Co, Wilmington, Del.
Mechling Bros. Chemical Co., Camden, N. J.
National Adhesives Corp., 822 Greenwich St., N. Y.
National Oil Products Co., Harrison, N. J.
Philadelphia Quartz Co., 125 S. 3rd St., Philadelphia
Rohm & Haas Co., 222 W. Washington Sq., Phila.
Sanford Mfg. Co., W. Congress & Peoria St., Chicago
A. E. Staley Mfg. Co., Decatur, Ill.
Stein, Hall & Co., 285 Madison Ave., N. Y.
Swift & Co., Chicago

AGITATORS

Alsop Engineering Corp., Milldale, Conn.
Beach-Russ Co., 50 Church St., N. Y.
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Eastern Engineering Co., 45 Fox St., New Haven, Conn.
Ertel Engineering Corp., Kingston, N. Y.
Filter Paper Co., 57 E. 24th St., Chicago
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
Foster Pump Works, 50 Washington St., Brooklyn
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259 46th St., Brooklyn
J. M. Lehmann Co., Lyndhurst, N. J.
Littleford Bros., 443 E. Pearl St., Cincinnati
Mixing Equipment Co., Inc., 1067 Garson Ave. Rochester, N. Y.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago, Ill. (Used)
Pfaudler Co., 89 East Ave., Rochester, N. Y.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Read Machy. Co., York, Pa.
Scientific Filter Co., 1 Franklin Sq., N. Y.
Ernest Scott & Co., P. O. Box 82, Fall River, Mass.
Sowers Mfg. Co., 1296 Niagara St., Buffalo
Sprout Waldron & Co., Muncy, Pa.
Stein Equipment Corp., 426 Broome St., N. Y. C. (Used)
Struthers-Wells Titusville Corp., Warren, Pa.

AGRICULTURAL INSECTICIDES

Agicide Laboratories, 1717 Taylor Ave., Racine, Wis.
Aluminum Co. of America, Gulf Bldg., Pittsburgh
American Agricultural Chem. Co., 50 Church St., N. Y.
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Ansbacher-Siegle Corp., Rosebank, S. I.
Bowker Chemical Co., 50 Church St., N. Y.
California Spray Chemical Corp., Richmond, Calif.
Carbide & Carbon Chem. Corp., 30 E. 42nd St., N. Y.
Cenol Co., 4250 N. Pulaski Ave., Chicago
Chipman Chemical Co., Bound Brook, N. J.
Dodge & Olcott Co., 180 Varick St., N. Y.
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Filtrol Corp., 634 S. Spring St., Los Angeles
Fuld Bros., Baltimore
General Chem. Co., 40 Rector St., N. Y.
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Hooker Electrochemical Co., Niagara Falls, N. Y.
Koppers Co., White Tar Div., Kearny, N. J.
McLaughlin, Gormley King Co., 1715—5th St., S. E. Minneapolis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Richards Sales Corp., Warren & Morris Sts., Jersey City, N. J.
Rohm & Haas Co., 222 W. Washington Sq., Phila.
Schaeffer Bros. & Powell Mfg. Co., 102 Barton St., St. Louis, Mo.
Sherwin-Williams Co., 292 Madison Ave., N. Y.
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Thompson-Hayward Chem. Co., Kansas City, Mo.
Tobacco By-Products & Chem. Corp., Louisville, Ky.
Velsicol Corp., 120 E. Pearson St., Chicago
Whitmire Research Corp., 339 S. Vandeventer, St. Louis
Woburn Chemical Corp., Harrison, N. J.
York Chem. Co., 424 W. 18th St., N. Y.

AMERICAN MANUFACTURED AROMATICS OF *Exceptional Quality*

UTMOST PURITY for use in Cosmetics and Perfume for pure finished products.

UNIFORMITY means economy in time and expense . . . with uniform, trouble free results.

DEPENDABILITY as to quality . . . proper packing . . . prompt shipping.

You can depend upon our Aromatics to give the superiority of bouquet that you desire.

Acetophenone
Alpha Amyl Cinnamic Aldehyde
Amyl Salicylate
Aubepine

Benzophenone
Benzyl Acetate
Bromelia

Calcium Vanillin
Cumarin
Cyclamal

Ethyl Phenyl Glycidate
Ethyl Methyl Phenyl Glycidate

Geranyl Acetate

Hydratropic Aldehyde

Indol
Ionone A.B.—Ionone Methyl
Ionone Ketone

Linalool
Linalyl Acetate

Methyl Acetophenone
Methyl Anthranilate
Methyl Naphthyl Ketone, Crystals, Liquid
Methyl Phenyl Acetate

Oil of Balsam Fir American
Oil of Petitgrain South American 46% Ester
Oil of Pine Needles American
Oil of Rosewood Brazilian

Para Cresyl Ethyl Ether
Para Cresyl Methyl Ether
Para Methyl Hydratropic Aldehyde
Phenyl Acet Aldehyde
Phenyl Acet Aldehyde Di Methyl Acetal
Phenyl Ethyl Acetate
Phenyl Ethyl Alcohol
Propriophenone

Styralyl Acetate
Styralyl Alcohol

Vanillin

Yara Yara

Also Essential Oils

INDOL

PRODUCT GL 4C A non toxic wetting agent and detergent with excellent foaming qualities for Liquid Dentifrices, Soapless Shampoos, Brushless Shaving Creams, etc.

Request for samples on your firm's letterhead will be promptly answered.

Aromatics Division
GENERAL DRUG COMPANY
644 Pacific St., Brooklyn, N. Y.
9 S. CLINTON STREET, CHICAGO 1019 ELLIOTT STREET, W., WINDSOR, ONT.

AGRICULTURAL INSECTICIDE SPREADERS

American Colloid Co., 363 W. Superior St., Chicago
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Ansbacher-Siegle Corp., Rosebank, S. I.
Atlantic Refining Co., 260 South Broad St., Phila.
Atlas Powder Co., Wilmington, Del.
California Industrial Minerals Co., Friant, Calif.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Dicalite Co., 120 Wall St., N. Y.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Kay-Fries Chemicals, Inc., 180 Madison Ave., N. Y.
National Oil Products Co., Harrison, N. J.
Richards Sales Corp., Jersey City, N. J.
Rohm & Haas Co., 222 W. Washington Sq., Phila.
R. T. Vanderbilt Co., 230 Park Ave., N. Y.

ALCOHOL (Ethyl and Denatured)

(see also Dealers)

American Coml. Alcohol Corp., 405 Lexington Ave., N. Y.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Commerce Petroleum Co., 2923 S. Lock Ave., Chicago
Comercial Solvents Corp., 17 E. 42nd St., N. Y.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Hercules Powder Co., Wilmington, Del.
Industrial Chem. Sales Div., West Va. Pulp & Paper Co., 230 Park Ave., N. Y.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
Pennsylvania Sugar Co., 139 S. 3rd St., Phila.
Publicker Commercial Alcohol Co., 260 E. Broad St., Phila.
U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.

ALCOHOL (Methyl or Wood) (See also METHANOL, SYNTHETIC)

(see also Dealers)

Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Cliffs-Dow Chemical Co., Marquette, Mich.
E. W. Colledge, General Sales Agent, Inc., P. O. Box 389, Jacksonville, Fla.
Commercial Solvents Corp., 17 E. 42nd St., N. Y.
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Hercules Powder Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Industrial Chem. Sales Div., West Va. Pulp & Paper Co., 230 Park Ave., N. Y.
Publicker Commercial Alcohol Co., 260 S. Broad St., Philadelphia
U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.
Wood Products Co., Buffalo, N. Y.

ALCOHOL, ISO-PROPYL

Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Shell Union Oil Corp., 100 Bush St., San Francisco
Standard Alcohol Co., 26 Bway., N. Y.
U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.

ALKALIES (see CAUSTIC SODA, SODA ASH, CAUSTIC POTASH, etc.)

ALUMINUM CHIPS (for Drain Solvent)

Aluminum Co. of Amer., Gulf Bldg., Pittsburgh
Belmont Smelting & Ref. Co., 318 Belmont Ave., Bklyn., N. Y.
Reynolds Metals Co., 19 Rector St., N. Y.

ALUMINUM STEARATE (see STEARATES)

ALUMS

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Armour Ammonia Wks., 1355 W. 31st St., Chicago
E. I. du Pont de Nemours & Co., Wilmington, Del.
General Chemical Co., 40 Rector St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Hercules Powder Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Merck & Co., Rahway, N. J.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila. (Ammonia)
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila.
E. M. Sergeant Pulp & Chem. Co., 233 5th Av., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

AMALGAMATORS (see SOAP MACHINERY)

AMINOHYDROXY COMPOUNDS

Commercial Solvents Corp., Terre Haute, Ind.

AMMONIA, HOUSEHOLD (see HOUSEHOLD AMMONIA)

AMMONIA WATER

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Barrett Co., 40 Rector St., N. Y.
Cole Laboratories, 22-14—37th Ave., Long Island City, N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Eastern Industries, Inc., Ridgefield, N. J.
General Chemical Co., 40 Rector St., N. Y.
Mallinckrodt Chem. Wks., St. Louis
Mathieson Alkali Works, 60 E. 42nd St., N. Y.
Merck & Co., Rahway, N. J.
Monsanto Chem. Co., 1700 S. 2nd St., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Shell Union Oil Corp., 100 Bush St., San Francisco
Solvay Sales Corp., 40 Rector St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.

AMMONIUM BI-FLUORIDE (see FLUORIDES)

AMMONIUM CARBONATE

(see also Dealers)

American-British Chm. Supplies, Inc., 180 Madison Ave., N. Y.
American Agricultural Chem. Co., 50 Church St., N. Y.
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.

AMMONIUM CHLORIDE

American Cyanamid & Chem. Co., 30 Rockefeller Plaza, N. Y.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
General Chemical Co., 40 Rector St., N. Y.

AROMATICS

SYNTHETIC

Beauty is well served by enticing fragrances and alluring scents. Perfumes and cosmetics gain materially in quality and distinction through Dow's long experience and technical facilities in the production of Synthetic Aromatics.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

DOW AROMATICS PRODUCTS

METHYL ANTHRANILATE • DIPHENYL OXIDE • INDOL • DIPHENYL METHANE • METHYL PHENYL CARBINYL ACETATE • METHYL SALICYLATE • STYRENE P-100 • COUMARIN • PHENYL ETHYL ALCOHOL

DOW

CHEMICALS INDISPENSABLE TO INDUSTRY AND VICTORY

on

HIGAN

BLE
ORY

AMMONIUM CHLORIDE (Contd.)

Hercules Powder Co., Wilmington, Del.
Merck & Co., Rahway, N. J.
Penn. Salt Mfg. Co., Widener Bldg., Phila.
E. M. Sergeant Pulp & Chem. Co., Empire State Bldg., N. Y.
Solvay Sales Corp., 40 Rector St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.

AMYL CINNAMIC ALDEHYDE (see AROMATIC CHEMICALS)

AMYL SALICYLATE (see AROMATIC CHEMICALS)

ANISE OIL (see ESSENTIAL OILS)

ANT POISONS

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
American Fluoride Corp., 151 W. 19th St., N. Y.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Associated Chemists, Inc., 1906 N. Halsted Ave., Chicago
Barton Chemical Co., 3907 S. Langley Ave., Chicago
Buckeye Chem. & Specialty Co., 131 E. 23rd St., N. Y.
California Spray-Chemical Corp., Richmond, Calif.
Geo. H. Conn Co., Freeport, Ill.
Chemical Supply Co., 2450 Canal Rd., Cleveland
Delta Chem. Co., 4 Payson Ave., N. Y.
Exterminating Materials Co., 555 W. 22nd St., N. Y.
Foote Mineral Co., 1609 Summer St., Phila.
Fuld Bros., Inc., 702 S. Wolfe St., Baltimore
Hysan Products Co., 58 E. Cullerton St., Chicago
Maywood Pest Exterminators, 1413 Washington Blvd., Maywood, Ill.
John Opitz, Inc., 50-14 39th St., Long Island City, N. Y.
Pfaltz & Bauer, Inc., Empire State Bldg. N. Y.
Ore & Chemical Corp., 80 Broad St., N. Y.
Soilicide Labs., 8 Laurel Pl., Upper Montclair, N. J.
Sennewald Drug Co., Inc., 2723 Chouteau Ave., St. Louis
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Uncle Sam Chem. Co., 329 E. 29th St., N. Y.
U. S. Sanitary Spec. Corp., 435 S Western Ave., Chicago
W-B Chemical Co., Mt. Vernon, N. Y.
York Chemical Co., 424 W. 18th St., N. Y.

APPLICATORS (for Floor Wax)

American Standard Mfg Co., 2509 S. Greene St., Chicago
Armstrong Cork Co., Lancaster, Pa.
Churchill Mfg. Co., Galesburg, Ill.
Continental Car-Na-Var Corp., Brazil, Ind.
Empire Brush Wks., Port Chester, N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
H. Hertzberg & Son, Inc., 2300 Fifth Ave., N. Y.
Higley Chem. Co., Dubuque, Iowa
R. M. Hollingshead Corp., Camden, N. J.
Hysan Products Co., 58 E. Cullerton St., Chicago
E. B. Moore & Co., 613 N. Parkside Ave., Chicago
Palmer Prods., Inc., Waukesha, Wis.
Pioneer Mfg. Co., 3053 E. 87th St., Cleveland
Shane & Hays, Inc., 5300—21st St., Brooklyn, N. Y.
H. F. Staples Co., Medford, Mass.
Uncle Sam Chem. Co. 329 E. 29th St., N. Y.

AROMATIC CHEMICALS (for Perfuming)

American-British Chem. Supplies, Inc., 180 Madison Ave., N. Y.
van Ameringen-Haebler, Inc., 315 Fourth Ave., N. Y.
Aromatic Products, Inc., 15 E. 30th St., N. Y.
Bush Pan America Ltd., 136 Liberty St., N. Y.
Ph. Chaleyer, Inc., 160 E. 56th St., N. Y.
Antoine Chiris Co., Inc., 115 E. 23rd St., N. Y.
Compagnie Duval, 121 E. 24th St., N. Y.
Compagnie Parento, Inc., Croton-on-Hudson, N. Y.

LAUTIER FILS

NATURAL AND AROMATIC RAW MATERIALS

FOR

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Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Delta Chem. Co., 4 Payson Ave., N. Y.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
Goulard & Olena, Inc., 140 Liberty St., N. Y.
Hercules Chem. Co., 332 Canal St., N. Y.
Higley Chem. Co., Dubuque, Iowa
R. M. Hollingshead Corp., Camden, N. J.
Hysan Prods Co., 58 E. Cullerton St., Chicago
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Mathieson Alkali Works, 60 E. 42nd St., N. Y.
Midland Labs., Dubuque, Iowa
Palmer Products Co., Waukesha, Wisc.
Peck's Products Co., St. Louis
Permutit Co., 330 W. 42nd St., N. Y.
Reilly Tar & Chemical Corp., Indianapolis, Ind.
Richards Sales Corp., Jersey City, N. J.
Theo. B. Robertson Prods. Co., 700 Division St., Chicago
Solshine Mfg. Co., 44 Brookline St., Cambridge, Mass.
John Sunshine Chem. Co., 604 W. Lake St., Chicago
Trojan Products & Mfg. Co., 3107 S. Wabash Ave., Chicago
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

BOIS de ROSE OIL (see ESSENTIAL OILS)

BORAX

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
American Potash & Chem. Corp., 233 Broadway, N. Y.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
General Chemical Co., 40 Rector St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N. Y.
Pacific Coast Borax Co., 51 Madison Ave., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.

BOTTLES

American Bottle Co., Toledo, O.
Armstrong Cork Co., Lancaster, Pa.
Anchor Hocking Glass Corp., Lancaster, Ohio
Capstan Glass Co., Connelsville, Pa.
Foster-Forbes Glass Co., Marion, Ind.
Graham Glass Co., Evansville, Ind.
Hazel Atlas Glass Co., Wheeling, W. Va.
Kimble Glass Co., Vineland, N. J.
Maryland Glass Corp., Baltimore, Md.
Millville Bottling Wks., Millville, N. J.
Owens Illinois Glass Co., Toledo, O.
F. E. Reed Gass Co., 860 Maple St., Rochester, N. Y.
Root Glass Co., Terre Haute, Ind.
Ruth Glass Co., Conshohocken, Pa.
Tygart Valley Glass Co., Washington, Pa.
T. C. Wheaton Co., Millville, N. J.

BOTTLE FILLING MACHINERY (see FILLING MACHINERY, BOTTLES)

BOTTLE WASHERS (see WASHING MACHINERY, BOTTLES)

BOX LINERS (see BAG LINERS)

BOXES (Corrugated and/or Fibre)

Brooklyn Fibre Syndicate, Decatur St. & Irving Ave., Brooklyn
Cambridge Paper Box Co., 196 Broadway, Cambridge, Mass.
Consolidated Paper Co., Monroe, Mich.
Container Corp. of America, 111 W. Washington St., Chicago
Robert Gair Co., 155 E. 44th St., N. Y.
Gardner-Richardson Co., Middletown, O.
Hinde & Dauch Paper Co., 222 Decatur St., Sandusky, O.
F. J. Kress Box Co., 2390 Liberty Ave., Pittsburgh
Owens-Illinois Glass Co., Toledo, O.
River Raisin Paper Co., Monroe, Mich.

BOXES (Fancy Paper)

Alderman-Fairchild Co., 367 Orchard St., Rochester, N. Y.
Baxter Paper Co., Brunswick, Me.
F. N. Burt Co., Ltd., 540 Seneca St., Buffalo, N. Y.
C. J. Fox Co., 236 Abron St., Providence, R. I.
Foxon Paper Co., 230 West Park St., Providence, R. I.
Robert Gair Co., 155 E. 44th St., N. Y.
Gardner-Richardson Co., Middletown, O.
R. R. Heywood, Inc., 26th St. & 9th Ave., N. Y.
R. J. Kittredge Co., 812 W. Superior St., Chicago
Pictorial Package Co., Aurora, Ill.
Piqua Paper Box Co., Piqua, O.
Potomac Lithograph Mfg. Co., Washington, D. C.
W. C. Ritchie & Co., 8801 S. Baltimore Ave., Chicago
Robert Paper Box Co., Montville, Conn.
Geo. Schmitt & Co., Grand & Florence Sts., Brooklyn
Strobridge Lithographing Co., Norwood Station, Cincinnati
Sutherland Paper Co., Kalamazoo, Mich.
U. S. Printing & Lithographing Co., Norwood, Cincinnati
Universal Folding Box Co., Monroe & 13th Sts., Hoboken, N. J.
Carl Voss Corp., Hoboken, N. J.

BOXES (Fancy Wooden)

Pilliod Cabinet Co., Swanton, O.

BROKERS (Chemicals)

S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh
John A. Chew, Inc., 60 E. 42nd St., N. Y.
Dickerson Co., Drexel Bldg., Phila.
Otto A. C. Hagen Co., Public Ledger Bldg., Phila.
Chas. L. Huisking & Co., 155 Varick St., N. Y.
Leo Pasternak, Inc., 110 William St., N. Y.
George Uhe, Inc., 80 Eighth Ave., N. Y.

BROKERS (Oils and Fats)

Irving R. Boody Co., 99 Wall St., N. Y.
Davidson Commission Co., 327 S. La Salle St., Chicago
John W. Hall, 327 S. La Salle St., Chicago
Otto A. C. Hagen Co., Public Ledger Bldg., Phila.
Hentz & Co., 60 Beaver St., N. Y.
Chas. Hollingshead Co., Produce Exchange, N. Y.
Horner Commission Co., 15 William St., N. Y.
E. G. James Co., 316 S. La Salle St., Chicago
Marwood Co., 221 N. LaSalle, Chicago
Miller & Co., 2401 Chestnut St., Philadelphia
Rayner & Stonington, Inc., 79 Wall St., N. Y.
J. H. Redding Co., 17 Battery Pl., N. Y.
Roesling, Monroe & Co., 133 Front St., N. Y.
Sterne & Son Co., Board of Trade Bldg., Chicago
Wm. M. Ware & Co., 88 Broad St., Boston
Weaver & Hugi, Inc., Produce Exchange Bldg., N. Y.
Welch, Holme & Clark Co., Inc., 563 Greenwich St., N. Y.

The can with the disappearing spout

It's 30 below zero. A mountain blizzard is howling. There's no firewood for miles.

Yet this ski trooper will soon be eating a hot meal!

Where does he get the fuel to start a fire? Right in his pack . . . in an ingenious little can!

Watch how he uses it: First, he spins a screw on top of the can. Pulls out a sliding spout—inserts it into a portable stove. Then he squeezes the can like a bellows, squirting in precious fuel without spilling a drop.

The spout works so easily he doesn't have to remove his gloves and freeze his hands. When he's finished, it disappears back in the can—out of the way.

Simple and practical. And, like all cans, tough! It's banged around. Dropped in snow. Exposed to violent temperature changes. But the fuel it carries gets there—*safe!*

This can is only one reason why you're getting fewer cans today. Millions of cans of fuel, water, food, and ammunition have gone to war. But they'll be back—better than ever, thanks to our war job as "Packaging Headquarters for America."

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Wilbur-Ellis Co., 17 Battery Pl., N. Y.
Wilson Brokerage, Inc., Produce Exchange, N. Y.

BROOMS

Alabama Broom & Mattress Co., Huntsville, Ala.
Burdett-Rose Mfg. Co., 6100 Independence Rd., Kansas City, Mo.
Chattanooga Broom & Mop Co., Chattanooga, Tenn.
Detroit Quality Brush Mfg. Co., 5937 Michigan Ave., Detroit
Eagle Woodenware Co., Hamilton, O.
Flour City Brush Co., Minneapolis
Illinois Brush Mfg. Co., 3316 Ogden Ave., Chicago
Kendallville Brush & Broom Co., Kendallville, Ind.
Tate Mfg. Co., 67 Sudbury St., Boston, Mass.
M. J. Toohey & Co., Fall River, Mass.

BRUSHES

American Standard Mfg. Co., 2509 S. Green St., Chicago
Auburn Brush Co., Columbia, Pa.
Burdett-Rose Mfg. Co., 6100 Independence Rd., Kansas City, Mo.
Detroit Quality Brush Mfg. Co., 5937 Michigan Ave., Detroit
Jos. O. Flatt & Co., 141 Cedar St., Reading, Pa.
Flour City Brush Co., 301 Fifth Ave., So., Minneapolis
J. I. Holcomb Co., Indianapolis
Illinois Duster & Brush Co., 1944 Webster Ave., Chicago
W. E. Kautenberg Co., P. O. Box 255, Freeport, Ill.
Kendallville Brush & Broom Co., Kendallville, Ind.
National Brush Co., Aurora, Ill.
New Jersey Brush Mfg. Co., Newton, N. J.
Opie Brush Co., Kansas City, Mo.
Ox Fibre Brush Co., Frederick, Md.
Pacific Coast Brush Co., Los Angeles
Palmer Prods., Inc., Waukesha, Wisc.
Pioneer Mfg. Co., Cleveland, O.
Sanitax Brush & Prods. Co., 230 E. Ohio St., Chicago
Silver-Chamberlin Co., Clayton, N. J.
Sullivan Brush Co., Terre Haute, Ind.
Tate Mfg. Co., 67 Sudbury St., Boston, Mass.

CAJUPUT OIL (see ESSENTIAL OILS)

CALCIUM HYPOCHLORITE

Hooker Electrochemical Co., Niagara Falls, N. Y.
Mathieson Alkali Wks., 60 E. 42nd St., N. Y.
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Penn. Salt Mfg. Co., Widener Bldg., Phila.
Pittsburgh Plate Glass Co., Columbia Chemical Div., Grant Bldg., Pittsburgh
Jos. Turner & Co., Ridgefield, N. J.
Wyandotte Chemicals Corp., Michigan Alkali Div., Wyandotte, Mich.

CALCIUM STEARATE (see STEARATES)

CAMPHOR OIL, SASSAFRASSY (see ESSENTIAL OILS)

CAMPHOR OIL, WHITE (see ESSENTIAL OILS)

CAN FILLING MACHINERY (see FILLING MACHINERY, CANS)

CANDELILLA WAX (see WAXES)

CAN SPOUTS AND NOZZLES

Anchor Hocking Glass Corp., Lancaster, Ohio
Aridor Co., 3428 W. 48th Place, Chicago
Crown Cork Specialty Corp., Decatur, Ill.
George D. Ellis & Sons, 309 N. 3rd St., Phila.
Standard Containers, Inc., Rockaway, N. J.
U-Pressit Corp., 420 Lexington Ave., N. Y.

CANS (Fibre or Paper)

American Can Co., 230 Park Ave., N. Y.
Cambridge Box Co., 196 Broadway, Cambridge, Mass.
Canister Co., Phillipsburg, N. J.
Cin-Made Corp., 294 Eggleston Ave., Cincinnati
Cleveland Container Co., 10630 Berea Rd., Cleveland
Continental Can Co., 100 E. 42nd St., N. Y.
Cross Paper Products Co., 2595 Third Ave., N. Y.
Fonda Container Co., 41 Park Row, N. Y.
Gardner-Richardson Co., Middletown, O.
Master Package Corp., Owen, Wis.
Middlesex Paper Tube Co., 342 Madison Ave., N. Y.
Midwest Paper Container Co., 707 N. 3rd St., Minneapolis
National Paper Can Co., Cudahy, Wis.
R. C. Can Co., 121 Chambers St., St. Louis
W. C. Ritchie & Co., 8801 S. Baltimore Ave., Chicago
Sutherland Paper Co., Kalamazoo, Mich.

CANS (Sifter Top)

American Can Co., 230 Park Ave., N. Y.
Anchor Hocking Glass Corp., Lancaster, Ohio
Cambridge Paper Box Co., 196 Broadway, Cambridge, Mass.
Canister Co., Phillipsburg, N. J.
Cans, Inc., 3217 W. 47th Pl., Chicago
Cleveland Container Co., 10630 Berea Rd., Cleveland
Cin-Made Corp., 294 Eggleston Ave., Cincinnati
Continental Can Co., Inc., 100 E. 42nd St., N. Y.
Crown Can Co., Erie Ave. & H St., Phila.
Middlesex Paper Tube Co., 342 Madison Ave., N. Y.
National Can Co., 110 E. 42nd St., N. Y.
Owens-Illinois Can Co., Toledo, O.
R. C. Can Co., 121 Chambers St., St. Louis
W. C. Ritchie & Co., 8801 S. Baltimore Ave., Chicago
Sefton Fibre Can Co., 3275 Big Bend Blvd., St. Louis
Standard Container, Inc., Bloomfield, N. J.
Sutherland Paper Co., Kalamazoo, Mich.

CANS (Steel) (See PAILS, Steel)

CANS (Tin)

American Can Co., 230 Park Ave., N. Y.
Anchor Hocking Glass Corp., Lancaster, Ohio
Central Can Co., 2415 W. 19th St., Chicago
Cans, Inc., 3217 W. 47th Pl., Chicago
J. L. Clark Mfg. Co., Rockford, Ill.
Columbia Can Co, 5221 Natural Bridge Ave., St. Louis
Continental Can Co., Inc., 100 E. 42nd St., N. Y.
Crown Can Co., Erie Ave. & H St., Phila.
George D. Ellis & Sons, 309 N. 3rd St., Phila.
Fein's Tin Can Co., Bush Terminal, Brooklyn
General Can Co., 1603 S. Canal St., Chicago
Heekin Can Co., Cincinnati
National Can Co., 110 E. 42nd St., N. Y.
Owens-Illinois Can Co., Toledo, O.
Phoenix Metal Cap Co., 2444 W. 16th St., Chicago

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But the canisters that hold the filter elements for those gas masks are a Crown wartime product . . . produced by the million in the Crown plant to safeguard military, naval and civilian users.

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St. Louis Can Co., 904 S. 14th St., St. Louis
Standard Container, Inc., Rockaway, N. J.

CAPPING MACHINERY

Alsop Engineering Corp., 100 High St., Milldale, Conn.
Anchor Hocking Glass Corp., Lancaster, Ohio
Consolidated Packaging Machinery Corp., 1400 West Ave., Buffalo
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
Crown Cork & Seal Co., Baltimore, Md.
Filter Paper So., 57 E. 24th St., Chicago
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
R. G. Haskins Co., 615 S. California St., Chicago
Karl Kiefer Machine Co., 919 Martin St., Cincinnati, Ohio
Ludcke Co., 41 N. Beacon St., Watertown, Mass.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago
Phoenix Metal Cap Co., 2444 W. 16th St., Chicago
Pneumatic Scale Corp., North Quincy, Mass.
Scientific Filter Co., 1 Franklin Sq., N. Y.
Stein Equipment Corp., 426 Broome St. Y. (Used)
Triangle Package Machy. Co., 910 N. Spaulding Ave., Chicago

CAPPING MATERIALS

Anchor Hocking Glass Corp., Lancaster, Ohio
Aridor Co., 3428 W. 48th Place, Chicago
Crown Cork Specialty Corp., Decatur, Ill.
Du Pont Cellophane Co., 2 Park Ave., N. Y.
Sylvania Industrial Corp., Chanin Bldg., N. Y.

CAPS (Molded)

Anchor Hocking Glass Corp., Lancaster, Ohio
Armstrong Cork Co., Lancaster, Pa.
General Plastics, Inc., N. Tonawanda, N. Y.
Owens-Illinois Glass Co., Toledo, hio
Resinox Corp., Terre Haute, Ind.
Toledo Synthetic Prods. Co., Toledo, Ohio

CAPS (Metal)

Aluminum Co. of America, Gulf Bldg., Pittsburgh
Anchor Hocking Glass Corp., Lancaster, Ohio
Aridor Co., 3428 W. 48th Place, Chicago
Armstrong Cork Co., Lancaster, Pa.
Cans, Inc., 3217 W. 47th Pl., Chicago
Closure Service Co., Toledo, Ohio
Continental Can Co., 100 E. 42nd St., N. Y.
Crown Cork & Seal Co., Eastern Ave. & Kresson St., Baltimore
George D. Ellis Sons, 309 N. 3rd St., Phila.
National Can Co., 110 E. 42nd St., N. Y.
National Seal Co., 14th Ave. & 37th St., Brooklyn
Owens-Illinois Glass Co., Toledo, Ohio
Phoenix Metal Cap Co., 2444 W. 16th St., Chicago

CARBOLIC ACID, CRUDE (see PHENOL)

CARBON BISULFIDE

(see also Dealers)

Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Westvaco Chlorine Prods., 405 Lexington Ave., N. Y.

CARBON TETRACHLORIDE

(see also Dealers)

J. T. Baker Chemical Co., Phillipsburg, N. J.
Brown Co., Portland, Me.
Diamond Alkali Corp., 535 Smithfield St., Pittsburgh
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Niagara Smelting Corp., Niagara Falls, N. Y.
Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Phila.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Westvaco Chlorine Prods., 405 Lexington Ave., N. Y.

CARNAUBA WAX (see WAXES)

CARTON HANDLING SYSTEMS

J. L. Ferguson Co., Joliet, Ill.
Pneumatic Scale Corp., Quincy, Mass.
Self-Lifting Piano Truck Co., Findlay, Ohio
Stephans-Adamson Mfg. Co., Aurora, Ill.
Weigh Right Automatic Scale Co., Joliet, Ill.

CARTON LINING MACHINES (see LINING MACHINERY)

CARTON SEALING MACHINERY (see SEALING MACHINERY)

CARTONING MACHINERY

Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
J. L. Ferguson Co., Joliet, Ill.
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
Johnson Automatic Sealer Co., Battle Creek, Mich.
R. A. Jones & Co., Cincinnati, Ohio
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago
Pneumatic Scale Corp., North Quincy, Mass.
F. B. Redington Co., 112 S. Sangamon St., Chicago
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
Stokes & Smith Co., 4915 Summerdale Ave., Phila.
Triangle Package Machinery Co., 906 N. Spaulding Ave., Chicago
Weigh Right Automatic Scale Co., Joliet, Ill.

CARTONS (Display and Knock Down)

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F. N. Burt Co., 540 Seneca St., Buffalo, N. Y.
Consolidated Paper Co., Monroe, Mich.
Robert Gair Co., 155 E. 44th St., N. Y.
Gardner-Richardson Co., Middletown, Ohio
Nevins-Church Co., 250 Park Ave., N. Y.
New England Card & Paper Co., Springfield, Mass.
Pictorial Package Co., Aurora, Ill.
Randolph Box & Label Co., 843 W. VanBuren St., Chicago
W. C. Ritchie & Co., 8855 S. Baltimore Ave., Chicago
Robertson Paper Box Co., Inc., Montville, Conn.
George Schmitt & Co., Grand & Florence Sts., Brooklyn
Sutherland Paper Co., Kalamazoo, Mich.
U. S. Printing & Lithographing Co., Cincinnati, Ohio
Universal Folding Box Co., Monroe & 13th St., Hoboken, N. J.

CASE SEALING MACHINERY (see SEALING MACHINERY)

FOR A *DOUBLE* FEATURE HOUSEHOLD SPRAY

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AA kill is not enough—not when you want a successful product that means sales, *that means profits!*

Velsicol AR-50 can give your spray the feature that creates consumer acceptance—*higher repellency*—by actual test a single application lasts longer than any other insecticide material and still gives you AA kill! So why not find out about Velsicol AR-50 today—and what it can do in sprays for flies, bedbugs, mosquitoes and other household pests.

Not only find out how effective it is . . . but . . . how economical . . . how available . . . how unvarying in quality!

AR-60 has proved itself the top ingredient in cattle sprays—for kill—for repellency—for brand demand!

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American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Casein Co. of America, Div. of The Borden Co., 350 Madison Ave., N. Y.
Wm. Diehl & Co., 336 W. 42nd St., N. Y. 18
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Hercules Powder Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Land-o-Lakes Creameries, Minneapolis
National Casein Co., 603 W. 80th St., Chicago
E. M. Sergeant Pulp & Chem. Co., Empire State Bldg., N. Y.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

CASES (Fibre) (see BOXES, CANS)

CASES (Corrugated) (see BOXES)

CASSIA OIL (see ESSENTIAL OILS)

CASTILE SOAP, BAR

Armour Soap Wks., 1355 W. 31st St., Chicago
Conti Products Corp., 155 Varick St., N. Y.
Haskins Bros. & Co., Omaha
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Kranich Soap Co., 54 Richards St., Brooklyn
Lockwood-Brackett Co., Waltham Station, Boston
Los Angeles Soap Co., Los Angeles, Calif.
Newell Gutradt Co., 350 Fremont St., San Francisco
Peck's Prods. Co., 5238 N. 2nd St., St. Louis
Procter & Gamble Co., Ivorydale, O.
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Bklyn.
Swift & Co., Chicago
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

CASTILE SOAP, LIQUID

Ampion Corp., 47-02 5th St., Long Island City, N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Baums Castorine Co., 200 Matthew St., Rome, N. Y.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Clifton Chemical Co., 247 Front St., N. Y.
Davies-Young Soap Co., Dayton, O.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., Kensington, Phila.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Harley Soap Co., Pierce & Orthodox Sts., Phila.
Higley Chem. Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Kranich Soap Co., 54 Richards St., Brooklyn
Lewis Soap & Chem. Co., 2210 San Pablo Ave. Oakland, Calif.
National Oil Products Co., Harrison, N. J.
Palmer Products, Inc., Waukesha, Wisc.
Peck's Prods. Co., 5238 N. 2nd St., St. Louis
Theo. B. Robertson Prods. Co., 700 W. Division St.,Chicago
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St.. N. Y.
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Superior Soap Corp., 121 Nostrand Ave., Bklyn.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

CASTOR OIL

(see also Dealers)

Archer-Daniels-Midland Co., Minneapolis
Baker Castor Oil Co., 120 Broadway, N. Y.
Balfour, Guthrie & Co., 67 Wall St., N. Y.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Otto A. C. Hagen Co., 929 Public Ledger Bldg., Phila.
Spencer Kellogg & Sons, Buffalo, N. Y.
Pacific Vegetable Oil Corp., 62 Townsend St., San Francisco
J. H. Redding, Inc., 17 Battery Place, N. Y.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Arthur C. Trask Co., 4103 S. La Salle St., Chicago
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

CATALYSTS

Aluminum Co. of America, Gulf Bldg., Pittsburgh
General Chem. Co., 40 Rector St., N. Y.
Harshaw Chem. Co., Cleveland
Wurster & Sanger, Inc., 5201 S. Kenwood Ave., Chicago

CATTLE DIPS AND SPRAYS

(see also Sheep Dips)

An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Cal.
Ampion Corp., 47-02 5th St., Long Island City, N. Y.
Associated Chemists, Inc., 1906 N. Halsted Ave., Chicago
Baird & McGuire, Holbrook, Mass.
Baird & McGuire, Inc. of Mo., St. Louis
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
California Spray-Chemical Corp., Richmond, Calif.
Cary Mfg. Co., 4917 E. Michigan St., Indianapolis
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Chipman Chem. Co., Bound Brook, N. J.
Clifton Chemical Co., 247 Front St., N. Y.
Davies-Young Soap Co., Dayton, O.
Delta Chem. Co., 4 Payson Ave., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Goulard & Olena, 140 Liberty St., N. Y.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Harrison Oil Co., 5110 N. 35th St., Milwaukee
Higley Chem. Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
James Huggins & Son, 239 Medford St., Malden, Mass.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Hunt Mfg. Co., Lisbon Rd., Cleveland
William E. Jordan & Bros., 2590 Atlantic Ave., Brooklyn
Kemico Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Koppers Co., White Tar Div., Kearny, N. J.
McLaughlin, Gormley, King Co., Minneapolis, Minn.
National Oil Products Co., Harrison, N. J.
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Prod. Co., 522-40 N. 2nd St., St. Louis
Rex Research Corp., Toledo
Theo. B. Robertson Prods. Co., 700 W. Division St.. Chicago
Schaeffer Bros. & Powell Mfg. Co., 102 Barton St St. Louis
Shores Co., Cedar Rapids, Ia.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ohio), Midland Bldg., Cleveland
Thompson-Hayward Chem. Co., 2915 Southwest Blvd., Kansas City, Mo.

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SODIUM PHOSPHATES (mono, di- and tri-basic)

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Perchlorethylene
Carbon Bisulfide
Sulfur Chloride

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Acid Sodium Pyrophosphate

MAGNESIUM PRODUCTS
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Magnesium Oxide, Refractory
Magnesium Hydrate
Magnesium Chloride
Magnesium Silicate

BARIUM PRODUCTS*
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Barium Hydrate
Barium Nitrate
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U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Universal Chem. Corp., Akron, O.
Velsicol Corp., 120 E. Pearson St., Chicago
Victory Chem. Co., 148 Fairmont Ave., Phila.
Robert C. White Co., Falls of Schuylkill, Phila.

CATTLE SPRAY BASE (see PETROLEUM BASES)

CAUSTIC POTASH (see POTASH, CAUSTIC)

CAUSTIC SODA

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Belle Alkali Co., Belle, W. Va.
Brown Company, Portland, Me.
Champion Fibre Co., Canton, N. C.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Hooker Electrochemical Co., Niagara Falls, N. Y.
Industrial Chem. Sales Div., West Va. Pulp & Paper Co., 230 Park Ave., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Kimberley-Clark Paper Co., Neenah, Wis.
Mathieson Alkali Works, 60 E. 42nd St., N. Y.
Michigan Electrochemical Co., Menominee, Mich.
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Niagara Smelting Corp., Niagara Falls, N. Y.
Oxford Paper Co., White Mountains, N. H.
Pennsylvania Salt Mfg. Co., Widener Bldg., Phila.
Pittsburgh Plate Glass Co., Columbia Chemical Div., Grant Bldg., Pittsburgh
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Solvay Sales Corp., 40 Rector St., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Westvaco Chlorine Prods. Co., 405 Lexington Ave., N. Y.
Welch, Holme & Clark, 563 Greenwich St.,, N. Y.
Wyandotte Chemicals Corp., Michigan Alkali Div., Wyandotte, Mich.

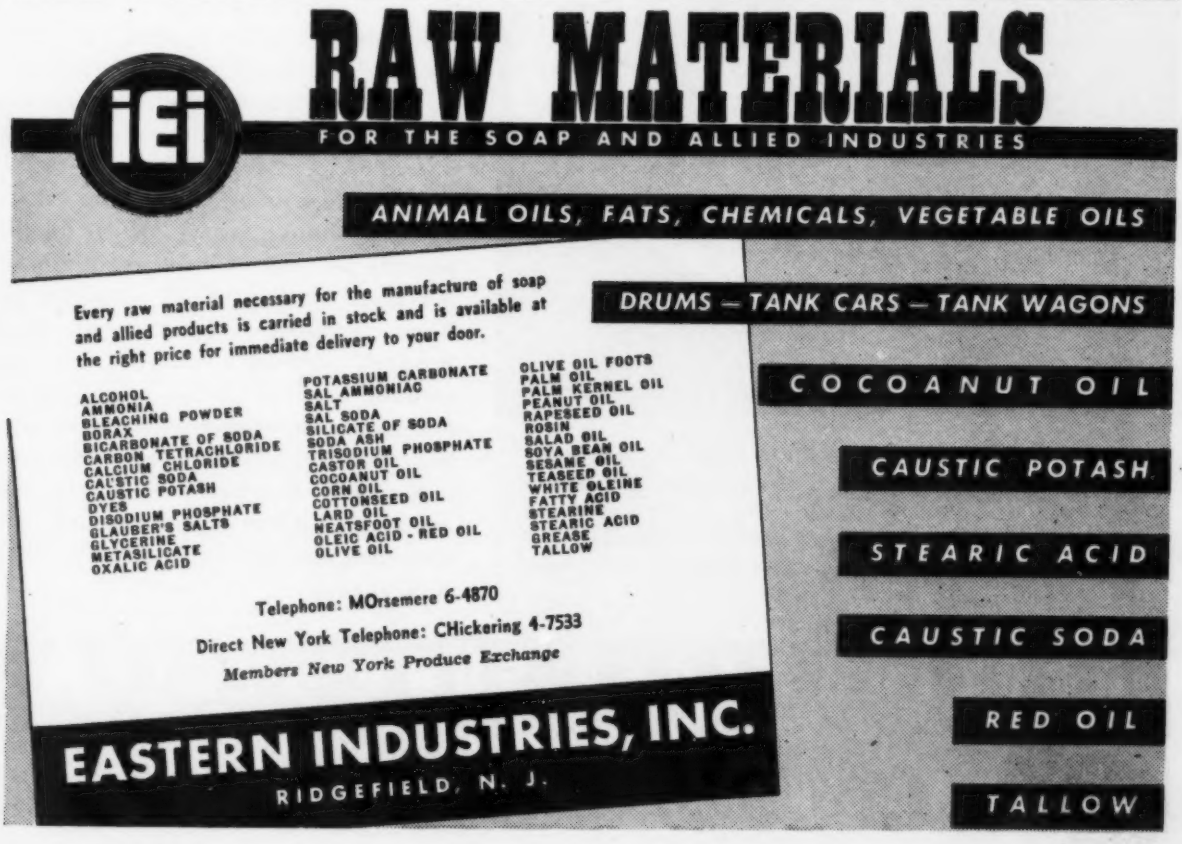
CEDAR LEAF OIL (see ESSENTIAL OILS)

CEDARWOOD OIL (see ESSENTIAL OILS)

CERESIN WAX (see WAXES)

CHALK (Calcium Carbonate)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
H. J. Baker & Bro., 271 Madison Ave., N. Y.
Binney & Smith Co., 41 E. 42nd St., N. Y.
Charles B. Chrystal Co., 16 Hudson St., N. Y.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
E. I. Du Pont de Nemours & Co., Wilmington, Del.
A. C. Drury & Co., 219 East North Water St., Chicago
Fezandie & Sperrle, 205 Fulton St., N. Y.
E. Fougera & Co., 41 Maiden Lane, N. Y.
Goris & Arnstein, 37th & Racine Ave., Chicago
K. F. Griffiths Co., 110 E. 42nd St., N. Y.



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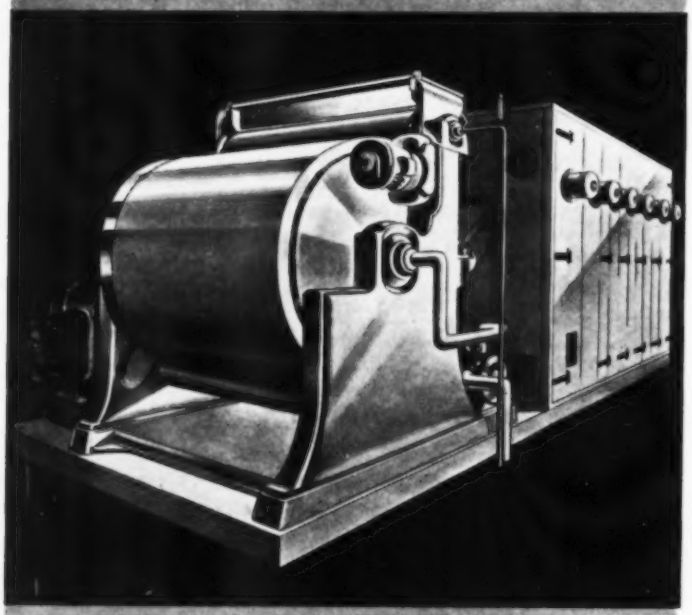

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Innis Speiden & Co., 117 Liberty St., N. Y.
James H. Rhodes & Co., 157 W. Hubbard St., Chicago
L. A. Salomon & Bro., 216 Pearl St., N. Y.
Tamms Silica Co., 228 N. LaSalle St., Chicago
Whittaker, Clark & Daniels, Inc., 260 W. Broadway, New York
Witco Chemical Co., 295 Madison Ave., N. Y.

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Addison Sponge Co., 118 E. Court St., Cincinnati
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Churchill Mfg. Co., Galesburg, Ill.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
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CHEMISTS, CONSULTING, See CONSULTANTS, See LABORATORIES, TESTING

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Hooker Electrochemical Co., Niagara Falls, N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mathieson Alkali Works, 60 E. 42nd St., N. Y.
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Pennsylvania Salt Mfg. Co., Widener Bldg., Phila.
Pittsburgh Plate Glass Co., Columbia Chemical Div., Grant Bldg., Pittsburgh
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Solvay Sales Corp., 40 Rector St., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Westvaco Chlorine Prods. Co., 405 Lexington Ave., N. Y.
Wyandotte Chemicals Corp., Michigan Alkali Div., Wyandotte, Mich.

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E. I. Du Pont de Nemours & Co., Wilmington, Del.
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Malinckrodt Chemical Works, St. Louis, Mo.
Merck & Co., Rahway, N. J.
Niagara Smelting Corp., Niagara Falls, N. Y.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.

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R. W. Greef & Co., 10 Rockefeller Plaza, N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Interstate Color Co., 5 Beekman St., N. Y.
Krembs & Co., 669 W. Ohio St., Chicago
Magnus, Mabee & Reynard, 16 Desbrosses St., N. Y.
Merck & Co., Rahway, N. J.
R. J. Prentiss & Co., 80 John St., N. Y.
Pylam Products Co., 799 Greenwich St., N. Y.
Sandoz Chem. Works, Inc., 61 Van Dam St., N. Y.
Schimmel & Co., 601 W. 26th St., N. Y.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

CITRAL (see AROMATIC CHEMICALS)

CITRONELLAL (see AROMATIC CHEMICALS)

CITRONELLA OIL (see ESSENTIAL OILS)

CITRONELLOL (see AROMATIC CHEMICALS)

CLAYS
(see also Bleaching Earths)

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American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Attapulgus Clay Co., 260 So. Broad St., Phila.
California Industrial Minerals Co., Friant, Calif.
Chas. B. Chrystal Co., 16 Hudson St., N. Y.
Dicalite Co., 120 Wall St., N. Y.
A. C. Drury & Co., 219 E. N. Water St., Chicago
Fezandie & Sperrle, 205 Fulton St., N. Y.
Filtrol Corp., 634 S. Spring St., Los Angeles
Goris & Arnstein, 37th & Racine Ave., Chicago
Hammil & Gillespie, 225 Broadway, N. Y.
Hercules Powder Co., Wilmington, Del.
J. M. Huber, Inc., 460 W. 34th St., N. Y.
Illinois Silica Co., Cairo, Ill.
Industrial Chem. Sales Div., West Va. Pulp & Paper Co., 230 Park Ave., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
International Silica Co., Cairo, Ill.
Natura Minerals Co., 108 W. 6th St., Los Angeles
National Sales Corp., 33 E. 13th St., Cincinnati
Owyhee Chemical Products Co., 300 W. Adams St., Chicago
Peerless Clay & Mineral Co., Pueblo, Colo.
L. A. Salomon & Bro., 216 Pearl St., N. Y.
Sinclair Refining Co., East Chicago, Ind.
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
A. E. Starkie Co., 5461 W. Division St., Chicago
Tamms Silica Co., 228 N. LaSalle St., Chicago
United Clay Mines Corp., 101 Oakland St., Trenton, N. J.
R. T. Vanderbilt Co., 230 Park Ave., N. Y.
Whittaker, Clark & Daniels, 260 W. Broadway, N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.
Wyodak Chem. Co., 4600 E. 71st St., Cleveland

CLEANERS, LIQUID (see also FLOOR SCRUB SOAPS)

American Chemical Paint Co., Ambler, Pa.
American Soap & Washoline Co., Cohoes, N. Y.
Ampion Corp., 47-02 5th St., Long Island City, N. Y.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Antiseptol Co., 5524 Northwest Highway, Chicago
Armour & Co., 1355 W. 31st, Chicago
Baird & McGuire, Inc., Holbrook, Mass.
Baird & McGuire, Inc., of Mo., St. Louis
Banner Chem. Prods. Co., 329 Mulberry St., Newark, N. J.
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Barton Chemical Co., 3907 S. Langley Ave., Chicago
Cenol Co., 4250 N. Pulaski Ave., Chicago
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 247 Front St., N. Y.
Cole Laboratories, 22-19 37th Ave., L. I. City, N. Y.
Continental Car-Na-Var Corp., Brazil, Ind.
Curran Corp., Malden, Mass.
Davies-Young Soap Co., Dayton, Ohio
Delta Chemical Co., 4 Payson Ave., N. Y.
Diversey Corp., 53 W. Jackson Blvd., Chicago
Eagle Soap Corp., Huntington, Ind.
Franklin Research Co., 5134 Lancaster Ave., Phila., Pa.
Fuld Bros., 702 So. Wolfe St., Baltimore
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Harley Soap Co., Pierce & Orthodox Sts., Phila.
Hercules Chem. Co., 332 Canal St., N. Y.
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco, Cal.
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, Ohio
James Huggins & Son, Malden, Mass.
Hull Co., 305 Washington St., Brooklyn
Hysan Prods. Co., 58 E. Cullerton St., Chicago
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Palmer Products, Inc., Waukesha, Wisc.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Pennsylvania Refining Co., Butler, Pa.
Puritan Chem. Co., Atlanta, Ga.
Richard's Sales Corp., Warren & Morris Sts., Jersey City, N. J.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Sanitary Prods. Co., 874 Seward St., Rochester, N. Y.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Solshine Mfg. Co., 44 Brookline St., Cambridge, Mass.
L. Sonneborn Sons, 88 Lexington Av., N. Y.
John T. Stanley Co., 642 W. 30th St., N. Y.
S. S. Stafford, Inc., 603 Washington St., N. Y.
Thompson-Hayward Chem. Co., 2915 Southwest Blvd., Kansas City, Mo.
Transmotive Laboratories, 2550 S. Michigan Ave., Chicago
Trojan Prods. & Mfg. Co., 3107 S. Wabash Ave., Chicago
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Uncle Sam Chemical Co., 329 E. 29th St., New York City
U. S. Sanitary Spec. Corp., 435 So. Western Ave, Chicago
Universal Chem. Corp., Akron, O.
Wilco Co., 6800 McKinley Ave., Los Angeles

CLEANING COMPOUNDS, DRY

American Soap & Washoline Co., Cohoes, N. Y.
American Chemical Paint Co., Ambler, Pa.
Ampion Corp., 47-02 5th St., Long Island City, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Barton Chemical Co., 3907 S. Langley Ave., Chicago
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Beach Soap Co., Lawrence, Mass.
Blockson Chemical Co., Joliet, Ill.
Brilco Laboratories, 947-61st St., Brooklyn, N. Y.
Cary Mfg. Co., 4917 E. Michigan St., Indianapolis
California Industrial Minerals Co., Friant, Calif.
Philip Carey Mfg. Co., Lockland, Cincinnati
Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Clifton Chem. Co., 247 Front St., N. Y.
Cole Labs., 22-19—37th Ave., Long Island City
Columbia Soap & Chem. Co., Inc., 217-221 Clara St., San Francisco
Continental Car-Na-Var Corp., Brazil, Ind.
Cowles Detergent Co., Cleveland, Ohio
Crystal Labs., Inc., 21 W. Park Way, N. E., Pittsburgh
Cudahy Packing Co., 221 N. LaSalle St., Chicago
Curran Corp., Malden, Mass.
Delta Chemical Co., 4 Payson Ave., N. Y.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
Diversey Corp., 53 W. Jackson Blvd., Chicago
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Goulard & Olena, Inc., 140 Liberty St., N. Y.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Haeuser Shellac Co., 52 Warren St., Brooklyn, N. Y.
Hercules Chem. Co., 332 Canal St., New York
Hercules Powder Co., Wilmington, Del.
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Prods. Co., 58 E. Cullerton St., Chicago
H. Kohnstamm & Co., 91 Park Pl., N. Y.
J. S. Lawston Co., 8 Henshaw St., N. Y.
Lewis Soap & Chem. Co., 2210 San Pablo Ave., Oakland, Calif.
Los Angeles Soap Co., Los Angeles, Calif.
M. & H. Laboratories, 2703 Archer Ave., Chicago
Mathieson Alkali Works, 60 E. 42nd St., N. Y.
Midland Labs., Dubuque, Iowa
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North Coast Soap & Chem. Wks., Seattle, Wash.
Pacific Chem. Co., 1421 N. Main St., Los Angeles
Palmer Products, Inc., Waukesha, Wisc.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Philadelphia Quartz Co., 125 S. 3rd St., Phila.
Pittsburgh Plate Glass Co., Columbia Chem. Div., Grant Bldg., Pittsburgh
Port Huron Detergent Co., Port Huron, Mich.
Puritan Chem. Co., Atlanta, Ga.
Richards Chem. Wks., Warren & Morris Sts., Jersey City, N. J.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Skotch Products Corp., 1220 W. 6th St., Cleveland
Solshine Mfg. Co., 44 Brookline St., Boston
Solvay Sales Corp., 40 Rector St., N. Y.
S. & S. Soap Co., 324 Barretto St., Bronx, N. Y.
John T. Stanley Co., 642 W. 30th St., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Stevens Soap Corp., 200 Sullivan St., Brooklyn
John Sunshine Chem. Co., 604 W. Lake St., Chicago
Tesco Chem. Co., P. O. Box 4748, Atlanta.
Thompson-Hayward Chem. Co., 2915 Southwest Blvd., Kansas City, Mo.
Trojan Prods. & Mfg. Co., 3130 S. Wabash Ave., Chicago
J. A. Tumbler Labs., 423 Hanover St., Baltimore
United Cleanser Mfg. Co., Cambridge, Mass.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Universal Chem. Corp., Akron, O.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.
Western Chem. & Mfg. Co., 4032 S. Wentworth Ave., Chicago
York Chemical Co., 424 W. 18th St., N. Y.

CLEANING FLUIDS (Spotting Fluids)

Ampion Corp., 4-88—47th Ave., Long Island City, N. Y.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Armour & Co., 1355 W. 31st St., Chicago
Atlantic Refining Co., 260 South Broad St., Phila.
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Clifton Chem. Co., 247 Front St., N. Y.
Cole Labs., 22-19 37th Ave., L. I. City, N. Y.
Curran Corp., Malden, Mass.
Davies-Young Soap Co., Dayton, O.
Delta Chemical Co., 4 Payson Ave., N. Y.
Elkay Products Corp., 323 W. 16th St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Higley Chem. Co., Dubuque, Iowa
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
James Huggins & Son, Malden, Mass.
Hull Co., 305 Washington St., Brooklyn
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Koppers Co., White Tar Div., Kearny, N. J.
La Maison Prods. Inc., 80 York St., Brooklyn, N. Y.
McKesson & Robbins, Bridgeport, Conn.
Merck & Co., Rahway, N. J.
Midway Chemical Co., 5235 W. 65th St., Chicago
Palmer Products, Inc., Waukesha, Wisc.
Peck's Prods. Co., 5224 N. 2nd St., St. Louis
Pennsylvania Refining Co., Butler, Pa.
Standard Oil Co. (Calif), 225 Bush St., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
R. R. Street & Co., 561 W. Monroe St., Chicago
Tesco Chem. Co., P. O. Box 4748, Atlanta
Transmotive Laboratories, 2550 S. Michigan Ave., Chicago
Trojan Prods. & Mfg. Co., 3107 S. Wabash Ave., Chicago
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Uncle Sam Chem. Co., 329 E. 29th St., N. Y.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Wilco Co., 6800 McKinley Ave., Chicago

CLIPS (for Collapsible Tubes) (see also TUBES, COLLAPSIBLE)

Acme Clip & Mfg. Co., 426 S. Clinton St., Chicago
Arthur Colton Co., Detroit
George G. Rodgers Co., 183 Varick St., N. Y.
Standard Spec. & Tube Co., New Brighton, Pa.

CLOSURES

Anchor Hocking Glass Corp., Lancaster, O.
Aridor Co., 3428 W. 48th Pl., Chicago
Closure Service Co., Toledo, O.
Continental Can Co., 100 E. 42nd St., N. Y.
Crown Cork & Seal Co., Baltimore
Crown Cork Specialty Corp., Decatur, Ill.
Williams Sealing Corp., Decatur, Ill.

CLOVE OIL (see ESSENTIAL OILS)

COAL TAR DISINFECTANTS (see DISINFECTANTS)

COCOA BUTTER

Walter Baker & Co., 601 W. 26th St., N. Y.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Spencer Kellogg & Sons, Buffalo, N. Y.
Monsanto Chem. Co., St. Louis, 4
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
A. N. Stollwerck Co., Camden, N. J.
Welch, Holme & Clark, 563 Greenwich St., N. Y.

COAL TAR RAW MATERIALS (CRESOLS, CREOSOTE OIL, CRESYLIC ACID, etc.)

American-British Chem. Supplies, 180 Madison Ave., N. Y.
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Baird & McGuire, Holbrook, Mass.
Baird & McGuire, Inc., of Mo., St. Louis
Barrett Co., 40 Rector St., N. Y.
S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh
Chemical Sales Corp., Pittsburgh, 19
Wm. Cooper & Nephews, 1909 Clifton Ave., Chicago
E. I. Du Pont de Nemours & Co., Wilmington, Del.
James Huggins & Son, Malden, Mass.
Innis, Speiden & Co., 117 Liberty St., N. Y.
William E. Jordan & Bro., 2590 Atlantic Ave., Brooklyn
Koppers Co., Koppers Bldg., Pittsburgh, Pa.
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis
Neville Co., Pittsburgh, Pa.
Pittsburgh Coal Carbonization Co., Oliver Bldg., Pittsburgh
Reilly Tar & Chemical Co., Indianapolis
Standard Naphthalene Prods. Co., S. Kearney, N. J.

COCONUT OIL

(see also Brokers and Dealers)

Atkins, Kroll & Co., 250 California St., San Francisco
Balfour, Guthrie & Co., 67 Wall St., N. Y.
Best Foods, Inc., 88 Lexington Ave., N. Y.
Capital City Products Co., Columbus, O.
E. F. Drew & Co., Wecoline Div., Boonton, N. J.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
El Dorado Oil Wks., 313 California St., San Francisco
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H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Smith-Weihman Co., 15 Moore St., N. Y.
A. E. Starkie Co., 5461 W. Division St., Chicago
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

COCONUT FATTY ACIDS, See Fatty Acids

COCONUT OIL SOAPS (see HARD WATER SOAPS)

COCONUT OIL BASE SOAP (see POTASH SOAPS)

COCONUT OIL SHAMPOO BASE (see SHAMPOO BASE and POTASH SOAPS)

COCONUT OIL POWDERED SOAP (see POWDERED SOAPS)

COLLAPSIBLE TUBES

Aluminum Company of America, Gulf Bldg., Pittsburgh, Pa.
Art Tube Co., Irvington, N. J.
Bond Penn Tube Co., 501 Monroe St., Wilmington, Del.
Consolidated Fruit Jar Co., New Brunswick, N. J.
Globe Collapsible Tube Corp., 28 Columbia Heights, Brooklyn, N. Y.
Hygienic Tube Co., 34 Ave. L., Newark, N. J. (Celluloid)
National Collapsible Tube Co., Providence, R. I.
New England Collapsible Tube Co., New London, Conn.
Peerless Tube Co., Bloomfield, N. J.
Sun Tube Corp., Hillside, N. J.
Victor Metal Products Corp., Brooklyn, N. Y.
White Metal Mfg. Co., 1012 Grand St., Hoboken, N. J.
A. H. Wirz, Inc., Chester, Pa.

COLLOID MILLS

Abbe Engineering Co., 50 Church St., N. Y.
Colloid Equip. Co., 50 Church St., N. Y.
Consolidated Products Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Manton-Gaulin Mfg. Co., 19 Charlton St., Everett, Mass.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago (Used)
Pfaudler Co., Rochester, N. Y.
Milton F. Robie, 30 Pittsburgh St., Boston
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
U. S. Colloid Mill Corp., 24-16 Bridge Plaza, S., L. I. City

COLORS, CERTIFIED

Ansbacher-Siegle Corp., Rosebank, Staten Island, N. Y.
Calco Chem. Division of American Cyanamid Co., Bound Brook, N. J.
Fezandie & Sperrle, 205 Fulton St., New York
Interstate Color Co., 5 Beekman St., New York
H. Kohnstamm & Co., 91 Park Place, New York
National Aniline & Chem. Div., 40 Rector St., N. Y.
Pylam Products Co., 799 Greenwich St., New York

COLORS (see also ESSENTIAL OILS)

American Aniline Prod., Inc., 50 Union Sq., N. Y.
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Stanley Doggett, Inc., 75 Varick St., N. Y.
A. C. Drury & Co., 219 East North Water St., Chicago
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Dyestuffs & Chemical, Inc., 11th & Monroe Sts., St. Louis
Fezandie & Sperrle, 205 Fulton St., N. Y.
Geigy Co., 89 Barclay St., N. Y.
General Dyestuffs Corp., 435 Hudson St., N. Y.
Interstate Color Co., 5 Beekman St., N. Y.
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Leeben Chem. Co., 389 Washington St., N. Y.
National Aniline & Chem. Div., 40 Rector St., N. Y.
Tamms Silica Co., 228 N. La Salle St., Chicago
Pylam Products Co., 799 Greenwich St., N. Y.
R. F. Revson Co., 144 W. 18th St., N. Y.
Sandoz Chem. Wks., 61 Van Dam St., N. Y.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y. (export)

COMPOUND CRESOL SOLUTIONS (see DISINFECTANTS, COAL-TAR)

COMPRESSORS (Air)

Beach-Russ Co., 50 Church St., N. Y.
Binks Mfg. Co., 3114 Carroll Ave., Chicago
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
Crowell Mfg. Co., 177 Clifton Pl., Brooklyn
De Vilbiss Co., Toledo, O.
Fairbanks-Morse & Co., 80 Broad St., N. Y.
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
Foster Pump Works, 51 Washington St., Brooklyn
Fumeral Co., Racine, Wisc.
Ingersoll-Rand Co., 11 Broadway, N. Y.
Miller-Simons, Inc., Cicero, Ill.
Nash Engineering Co., South Norwalk, N. Y.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
Worthington Pump & Machinery Corp., 2 Park Ave., N. Y.

CONSULTANTS (Chemists, Engineers, Testing Laboratories, Etc.)

Applied Research Laboratories, Dayton, N. J.
Columbus Labs., 33 N. State St., Chicago
Curtis & Tompkins, Ltd., 236 Front St., San Francisco, Calif.
Dairy Laboratories, 2300 Locust St., Phila.
Entomological Testing Labs., 114 E. 32nd St., N. Y.
Wm. Garrigue & Co., 9 S. Clinton St., Chicago
Hochstadter Laboratories, Inc., 18 E. 41st St., N. Y.
Illinois Chemical Labs., Gridley, Ill.
La Wall & Harrison, 214 S. 12th St., Phila.
Lederer Bacteriological Labs., 269 S. 19th St., Phila.
Alan Porter Lee, Inc., 136 Liberty St., N. Y.
Pease Laboratories, 39 W. 38th St., N. Y.
Samuel P. Sadtler & Son, 210 S. 13th St., Phila.
Seil, Putt & Rusby, 16 E. 34th St., N. Y.
Skinner & Sherman, 246 Stuart St., Boston
Foster D. Snell, 305 Washington St., Brooklyn
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Dow Co., 1025 Franklin St., Louisville, Ky.
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
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B. F. Gump Co., 431 S. Clinton St., Chicago
Horix Mfg. Co., Pittsburgh
Houchin Machinery Co., Hawthorne, N. J.
Jeffrey Mfg. Co., 924 N. 4th St., Columbus, O.
Karl Kiefer Machine Co., 919 Martin St., Cincinnati
Lancaster Iron Works, Lancaster, Pa.
Link-Belt Co., 910 S. Michigan, Chicago
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago
Pneumatic Scale Corp., North Quincy, Mass.
Read Machy. Co., York, Pa.
George G. Rodgers Co., 183 Varick St., N. Y.
Sprout Waldron & Co., Muncy, Pa.
Standard Conveyor Co., N. St. Paul, Minn.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Sterns Conveyor Co., Cleveland
F. J. Stokes Machine Co., Tabor Rd., Phila., Pa.
Triangle Package Machy. Co., 906 N. Spaulding Ave., Chicago
Weigh Right Automatic Scale Co., 404 Grant Ave., Joliet, Ill.

COPPER NAPHTHENATE

Cuprinol, Inc., 7 Water St., Boston
General Petroleum Corp. of Calif., 108 W. 2nd St., Los Angeles
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Nuodex Prods. Co., 312 Division St., Elizabeth, N. J.

COPPER SULFATE (Blue Vitriol)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Faesy & Besthoff, Inc., 22 E. 40th St., N. Y.
General Chemical Co., 40 Rector St., N. Y.
Hawshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N. Y.
Merck & Co., Rahway, N. J.
Raritan Copper Wks., Perth Amboy, N. J.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
E. M. Sergeant Pulp & Chem. Co., 350—5th Ave., N. Y.
Tennessee Copper Co., 61 Broadway, N. Y.

CORKING MACHINERY

Edward Ermold Co., 652 Hudson St., N. Y.
Horix Mfg. Co., Pittsburgh
Karl Kiefer Machine Co., 919 Martin St., Cincinnati
Newman, Tallow & Soap Mchy. Co., 1051 W. 35th St., Chicago
Pneumatic Scale Corp., North Quincy, Mass.

CORKS

Armstrong Cork Co., Lancaster, Pa.
Cork Import Corp., 330 W. 42nd St., N. Y.
Dodge Cork Co., Lancaster, Pa.

CORN OIL

(see also Brokers and Dealers)

American Maize Prods. Co., 110 E. 42nd St., N. Y.
Balfour, Guthrie & Co., Ltd., 67 Wall St., N. Y.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Corn Products Refining Co., 17 Battery Pl., N. Y.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Early & Daniel Co., Ingalls Bldg., Cincinnati
Otto A. C. Hagen Corp., 929 Public Ledger Bldg., Phila.
Spencer Kellogg & Sons, Buffalo, N. Y.
National Starch Products, 820 Greenwich St., N. Y.
E. M. Sergeant Pulp & Chem. Co., 350—5th Ave., N. Y.
A. E. Starkie, 5461 W. Division St., Chicago
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.
Woolner & Co., Peoria, Ill.

COSMETICS (Private Brand, Compacts, Lipsticks, etc.)

Amer. Perfumers Labs., 30 Rockefeller Plaza, N. Y.
Richard Gesell, Inc., 200 W. Houston St., N. Y.
Luxor, Ltd., 1355 W. 31st St., Chicago
National Oil Products Co., Harrison, N. J.
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
Julius Schmid, Inc., 423 W. 55th St., N. Y.
Shores Co., Cedar Rapids, Ia.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

COTTONSEED FATTY ACIDS (and Soapstock)

(see also Brokers and Dealers)

Armour Soap Wks., 1355 W. 31st St., Chicago
T. G. Cooper & Co., 47 N. 2nd St., Phila.
E. F. Drew & Co., Wecoline Div., Boonton, N. J.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
Emery Industries, Inc., 4300 Carew Tower, Cincinnati
Otto A. C. Hagen Corp., 929 Public Ledger Bldg., Phila.
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Spencer-Kellogg & Sons, Buffalo, N. Y.
Portsmouth Cotton Oil Refining Co., Portsmouth, Va.
Procter & Gamble Co., Cincinnati, O.
J. H. Redding, Inc., 17 Battery Place, N. Y.
E. M. Sergeant Pulp & Chem. Co., 350—5th Ave., N. Y.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
Southern Cotton Oil Co., Produce Exchange, N. Y.
A. E. Starkie, 5461 W. Division St., Chicago
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.
Wilson-Martin Co., Swanson St., Phila.
Woburn Chemical Corp., Harrison, N. J.

COTTONSEED OIL

(see also Brokers and Dealers)

Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
Otto A. C. Hagen Corp., 929 Public Ledger Bldg., Phila.
Spencer Kellogg & Sons, Buffalo, N. Y.
Los Angeles Soap Co., Los Angeles, Calif.
Portsmouth Cotton Oil Refining Corp., Portsmouth, Va.
Procter & Gamble Co., Cincinnati, O.
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Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

COUMARIN

(see also Aromatic Chemicals)

Dodge & Olcott Co., 180 Varick St., N. Y.
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E. I. Du Pont de Nemours & Co., Wilmington, Del.
General Drug Co., 644 Pacific St., Bklyn.
Givaudan-Delawanna, 330 W. 42nd St., N. Y.
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E. I. Du Pont de Nemours & Co., Wilmington, Del.
Hammond Paint & Chem. Co., Beacon, N. Y.
J. L. Hopkins & Co., 220 Bway., N. Y.
Lenape Trading Co., 233 Broadway, N. Y.
McCormick & Co., Baltimore, Md.
Orbis Products Corp., 215 Pearl St., N. Y.
S. B. Penick & Co., 50 Church St., N. Y.
John Powell & Co., 114 E. 32nd St., N. Y.
R. J. Prentiss & Co., 80 John St., N. Y.
Frank B. Ross Co., 507—8th St., Hoboken, N. J.
U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y. (derris)
Whitmire Research Corp., 339 S. Vandeventer, St. Louis

CUTTING TABLES (see SOAP MACHINERY)

CYANIDES (see FUMIGANTS) (see SODIUM CYANIDE)

CYMENE

Brown Co., Portland, Me.
Hercules Powder Co., Wilmington, Del.
Industrial Chem. Sales Div., West Va. Pulp & Paper Co., 230 Park Ave., N. Y.
Orbis Products Corp., 215 Pearl St., N. Y.

DEALERS (Chemicals)

Akron Chem. Co., 1025 Sweitzer Ave., Akron, Ohio
Alrose Chem. Co., 80 Clifford St., Providence, R. I.
American-British Chem. Supplies, 180 Madison Ave., N.Y.
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
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Benner Chemical Co., 20 N. Wacker St., Chicago
Braun-Knecht-Heimann Co., 584 Mission St., San Francisco
Buckeye Soda Products Co., 32 Main St., Cincinnati
John H. Calo, 19 Rector St., N. Y.
John A. Chew, Inc., 60 E. 42nd St., N. Y.
Alan A. Claflin, 88 Broad St., Boston
Consumers Chemical Co., Drexel Bldg., Philadelphia
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Dickerson Co., Drexel Bldg., Phila.
Doe & Ingalls, 56 Garden St., Boston
A. C. Drury & Co., 219 E. North Water St., Chicago
Eastern Industries, Ridgefield, N. J.
Eaton Clark Co., 1490 Franklin St., Detroit
Enco Chem. Corp., 441 Lexington Ave., N. Y.
F. P. L. Chemical Co., 647 West Virginia St., Milwaukee
Faesy & Besthoff, 22 E. 40th St., N. Y.
Alex C. Fergusson Co., Drexel Bldg., Phila.
Fort Pitt Chemical Co., 3134 Penn Ave., Pittsburgh
General Drug Co., 170 Varick St., N. Y.
Globe Chemical Co., Murray Road, Cincinnati
Griffin Chem. Co., 1000 16th St., San Francisco
Otto A. C. Hagen Corp., 929 Public Ledger Bldg., Phila.
C. P. Hall Co., Akron, Ohio
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Herbert Chem. Co., Vine & Murray Rd., Cincinnati
Arnold Hoffman & Co., 55 Canal St., Providence, R. I.
Howe & French, 99 Broad St., Boston
Hummel Chemical Co., 90 West St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Wm. E. Jordan & Bro., Inc., 2590 Atlantic Ave., Brooklyn
E. & F. King & Co., 405 Atlantic Ave., Boston
Los Angeles Chem. Co., 2200 Santa Fe Ave., Los Angeles
John F. Maher & Co., 1600 Henderson St., Houston, Tex.
George Mann & Co., 251 Fox Point Blvd., Providence, R. I.
Merchants Chemical Co., 60 East 40th St., N. Y.
Millard-Heath Co., 14 Pine St., St. Louis
Clarence Morgan & Co., 355 W. Ontario St., Chicago
Mulcahy & Griffin, 141 Milk St., Boston
National Oil & Supply Co., 172 Frelinghuysen Ave., Newark, N. J.
National Sales Co., 31 E. 13th St., Cincinnati
Wm. D. Neuberg Co., 420 Lexington Ave., N. Y.
Neumann-Buslee & Wolfe, 224 W. Huron St., Chicago
Newman Tallow & Soap Machinery Co., 1051 W. 35th St., Chicago
Paper Makers Chemical Div., Hercules Powder Co., Wilmington, Del.
R. Peltz Co., 112 S. 16th St., Philadelphia
Pfaltz & Bauer, Inc., 350 5th Ave., N. Y.
H. B. Prior Co., 420 Lexington Ave., N. Y.
Providence Textile Chem. Co., 2 Randall St., Providence, R. I.
Chas. L. Read & Co., 120 Greenwich St., N. Y.
R. F. Revson Co., 144 W. 18th St., N. Y.
James H. Rhodes & Co., 153 W. Hubbard St., Chicago
G. S. Robins & Co., 310 S. Commercial St., St. Louis
Rodgers Chemical Co., Fitzsimmons Bldg., Pittsburgh
Rogers & McClellan, 143 Milk St., Boston
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
E. M. Sergeant Pulp & Chemical Co., 350—5th Ave., N. Y.
H. J. Rolls Chemical Co., Buffalo, N. Y.
George Senn, Philadelphia Bourse, Phila.
Sessions-Gifford Co., 255 Allens Ave., Providence, R. I.
Irving M. Sobin Co., 72-74 Granite St., Boston
J. U. Starkweather Co., Providence, R. I.
Thompson-Hayward Chem. Co., 2915 Southwestern Blvd., Kansas City
Arthur C. Trask Co., 4103 S. La Salle, St., Chicago, Ill.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

DEALERS (Oils and Fats)

Balfour, Guthrie & Co., 67 Wall St., N. Y.
John Calo, 19 Rector St., N. Y.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Eastern Industries, Ridgefield, N. J.
E. H. Frey Co., 2 Broadway, N. Y.
Alex Fergusson Co., Drexel Bldg., Philadelphia
Otto A. C. Hagen Corp., 929 Public Ledger Bldg., Phila.
A. W. Harris Oil Co., Providence, R. I.
J. H. Hinz Co., 825 Engineers Bldg., Cleveland
Innes & Co., 533 Canal St., N. Y.
E. G. James Co., 332 So. La Salle St., Chicago
Miller & Co., 2401 Chestnut St., Philadelphia
Clarence Morgan & Co., 919 N. Michigan, Chicago
Murray Oil Products Co., 21 West St., N. Y.
Newman Tallow & Soap Machinery Co., 1051 W. 35th St., Chicago
Rayner & Stonington, 79 Wall St., N. Y.
Chas. L. Read & Co., 120 Greenwich St., N. Y.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Willibald Schaefer Co., Foot of Boemen Ave., St. Louis
George Senn, Philadelphia Bourse, Phila.
E. M. Sergeant Pulp & Chemical Co., 350—5th Ave., N. Y.
Smith-Weihman Co., 15 Moore St., N. Y.
Swan-Finch Oil Corp., 30 Rockefeller Plaza, N. Y.
Arthur C. Trask Co., 4103 S. La Salle St., Chicago
Tunley & Co., 60 Beaver St., N. Y.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

DECOLORIZING CARBONS

Allied Carbon Co., Los Angeles, Calif.
Atlas Powder Co., Wilmington, Del.
Chemical Sales Corp., Pittsburgh, 19
Cliffs-Dow Chem. Co., Marquette, Mich.
Darco Sales Corp., 60 E. 42nd St., N. Y.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Industrial Chem. Sales Div., West Va. Pulp & Paper Co., 230 Park Ave., N. Y.
L. A. Salomon & Bros., 216 Pearl St., N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.

DEODORIZED KEROSENE (see PETROLEUM)

DEGRAS (see WOOL GREASE)

DEGREASING COMPOUNDS (see CLEANERS, LIQUID)

DEODORIZING BLOCK HOLDERS (see HOLDERS, DEODORIZING BLOCKS)

DEODORIZING BLOCK PERFUMES (see PERFUMING COMPOUNDS)

DEODORIZING BLOCK PRESSES (see PRESSES)

DEODORIZING AND BLEACHING EQUIPMENT (For Oils)

Foster-Wheeler Co., 165 Broadway, N. Y.
William Garrigue & Co., 9 S. Clinton St., Chicago
Houchin Machinery Co., Hawthorne, N. J.
Alan Porter Lee, Inc., 136 Liberty St., N. Y.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago
Pfaudler Co., 89 East Ave., Rochester, N. Y.
Ernest Scott & Co., Fall River, Mass.
F. J. Stokes Machine Co., 5918 Tabor Rd., Phila.
Wurster & Sanger, 5201 Kenwood Ave., Chicago

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Ampion Corp., 47-02 5th St., Long Island City, N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago

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Chemical Compound Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prod. Co., 3100 S. Throop St., Chicago
Clifton Chem. Co., 247 Front St., N. Y.
Cole Laboratories, 22-19 37th Ave., L. I. City, N. Y.
Columbia Soap & Chem. Co., Inc., 324 Leavenworth St., San Francisco
Crystal Labs, Inc., 21 W. Park Way, N. E., Pittsburgh
Davies-Young Soap Co., Dayton, O.
Delta Chemical Co., 4 Payson Ave., N. Y.
Eagle Soap Corp., Huntington, Ind.
Elkay Products Corp., 323 W. 16th St., N. Y.
Fitch Dustdown Co., 801 S. Howard St., Baltimore
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Goulard & Olena, 140 Liberty St., N. Y.
Higley Chemical Co., Dubuque, Iowa
Hockwald Chemical Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Industrial Labs., 17-19 W. Conway St., Baltimore
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Calif.
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Koppers Co., White Tar Div., Kearney, N. J.
Lewis Soap & Chem. Co., 2210 Pablo Ave., Oakland, Calif.
Midland Labs., Dubuque, Iowa
North Coast Soap & Chem. Wks., Seattle, Wash.
Palmer Products, Inc., Waukesha, Wisc.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Puritan Chemical Co., Atlanta, Ga.
Theo. B. Robertson Prods., Co., 700 W. Division St., Chicago
Rochester Germicide Co., Rochester, N. Y.
Selig Co., 336 Marietta St., Atlanta, Ga.
Solshine Mfg. Co., 412—2nd St., Fall River
Trojan Products & Mfg. Co., 3107 S. Wabash Ave., Chicago
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Uncle Sam Chemical Co., 329 E. 29th St., N. Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Victory Chemical Co., 148 Fairmount Ave., Phila.
York Chemical Co., 424 W. 18th St., N. Y.

DERRIS PRODUCTS (see CUBE PRODUCTS)

DETERGENTS (Alkaline Salt Compounds)

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, N. Y.
American Soap & Washoline Co., Cohoes, N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Armour & Co., 1355 W. 31st St., Chicago
Blockson Chemical Co., Joliet, Ill.
Calgon, Inc., Pittsburgh
Candy & Co., 2515 W. 35th St., Chicago
Chemical Mfg. & Dist. Co., Easton, Pa.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Cowles Detergent Co., 7016 Euclid Ave., Cleveland
Curran Corp., Malden Mass.
Delta Chem. Co., 4 Payson Ave., N. Y.
Diamond Alkali Co., Standard Silicate Div., 535 Smithfield St., Pittsburgh
Diversey Corp., 53 W. Jackson Blvd., Chicago
DuBois Soap Co., Cincinnati
E. I. Du Pont de Nemours & Co., Wilmington, Dela.
Economics Laboratory, Globe Bldg., St. Paul
Fuld Bros., Baltimore
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Hercules Powder Co., Wilmington, Dela.
Higley Chemical Co., Dubuque, Iowa
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Monsanto Chemical Co., 1724 S. 2nd St., St. Louis
Napthole, Inc., 15 E. 26th St., New York
National Oil Products Co., Harrison, N. J.
Peck's Prods. Co., 5224 N. 2nd St., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Philadelphia Quartz Co., 125 S. 3rd St., Philadelphia
Pittsburgh Plate Glass Co., Columbia Chemical Div., Grant Bldg., Pittsburgh
Port Huron Detergent Co., Port Huron, Mich.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Sanitary Soap Co., 104 Railroad Ave., Patterson, N. J.
Stevens Soap Corp., 200 Sullivan St., Brooklyn, N. Y.
E. M. Sergeant Pulp & Chem. Co., 350 Fifth Ave., N. Y.
Solvay Sales Corp., 40 Rector St., N. Y.
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Chicago
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Jos. Turner & Co., Ridgefield, N. J.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Westvaco Chlorine Prods. Co., 405 Lexington Ave., N. Y.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.
Wyandotte Chemical Corp., Wyandotte, Mich.

DETERGENTS, Synthetic (Non-soap) Raw Materials

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, N. Y.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
E. F. Drew & Co., Wecoline Div., Boonton, N. J.
E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del.
General Drug Co., 644 Pacific St., Bklyn.
General Dyestuff Corp., 435 Hudson St., N. Y.
Michel Export Co., Inc., 90 Broad St., N. Y.
Monsanto Chem. Co., St. Louis
National Aniline & Chemical Co., 40 Rector St., N. Y.
National Oil Products Co., Harrison, N. J.
L. Sonneborn Sons, 88 Lexington Ave., N. Y.

DETERGENTS, Synthetic Organic, (Non-soap)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Carbide & Carbon Chem. Corp., 30 E. 42nd St., N. Y.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Commercial Solvents Corp., Terre Haute, Ind.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Emulsol Corp., 59 E. Madison St., Chicago
Fuld Bros., 702 S. Wolfe St., Baltimore
General Drug Co., 644 Wolfe St., Bklyn.
General Dyestuff Corp., 435 Hudson St., N. Y.
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Hercules Powder Co., Wilmington, Del.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Lever Bros. Co., Cambridge, Mass.
Mathieson Alkali Works, 60 E. 42nd St., N. Y.
Michel Export Co., 90 Broad St., N. Y.
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National Aniline & Chem. Co., 40 Rector St., N. Y.
National Oil Products Co., Harrison, N. J.
Procter & Gamble Co., Cincinnati, O.
Richards Sales Corp., Jersey City, N. J.
Sandoz Chem. Wks., 61 Van Dam St., N. Y.
L. Sonneborn Sons, 88 Lexington Ave., N. Y.
Van Dyk & Co., Belleville, N. J.

DIATOMACEOUS EARTH, (see Bleaching Earths)

DIES (see SOAP DIES)

DIETHANOLAMINE (see ETHANOLAMINE)

DIFFUSERS (Steam and Air)

Electric Sprayit Co., Sheboygan, Wisc.
Fumeral Co., Racine, Wisc.
Mystic Products Co., 417 No. 5th St., Minneapolis

DIPHENYL OXIDE (see AROMATIC CHEMICALS)

DIP OIL (see COAL TAR RAW MATERIALS)

DISH WASHING COMPOUND DISPENSERS

Antiseptol Co., 5524 Northwest Highway, Chicago
Wm. M. Britton Co., 8610 Graham Ave., Los Angeles
Chemical Mfg. & Dist. Co., Easton, Pa.
Economics Laboratory, Inc., 622 Globe Bldg., St. Paul
Fuld Bros., 702 S. Wolfe St., Baltimore
Hochwald Chem. Co., 135 Mississippi St., San Francisco
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Mathieson Alkali Wks., 60 E. 42nd St., N. Y. (Cakes)
John T. Stanley Co., 642 W. 30th St., N. Y.
V. C. Products Co., Beury Bldg., Philadelphia (Powders)

DISH WASHING COMPOUNDS (see CLEANING COMPOUNDS, DRY)

DISINFECTANTS, CHLORINATED

Ampion Corp., 42-02 5th St., Long Island City, N. Y.
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 247 Front St., N. Y.
Cole Laboratories, 22-19 37th Ave., L. I. City, N. Y.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
Goulard & Olena, Inc., 140 Liberty St., N. Y.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco, Calif.
R. M. Hollingshead Corp., Camden, N. J.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Mathieson Alkali Works, 60 E. 42nd St., N. Y.
McLaughlin Gormley King Co., Minneapolis, Minn.
Merck & Co., Rahway, N. J.
Midland Labs., Dubuque, Iowa
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis
North Coast Soap & Chem. Works, Seattle, Wash.
Peck's Prods. Co., 5224 N. 2nd St., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Puritan Chem. Co., Atlanta, Ga.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Sanitary Prods. Co., 874 Seward St., Rochester, N. Y.
Sherwin-Williams Co., 601 Canal Rd., Cleveland
Thompson-Hayward Chemical Co., Kansas City, Mo.
Trojan Products & Mfg. Co., 3107 S. Wabash Ave., Chicago
J. A. Tumbler Labs., 423 Hanover St., Baltimore
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Victory Chem. Co., 148 Fairmount Ave., Phila.

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Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Clifton Chemical Co., 247 Front St., N. Y.
Cole Laboratories, 22-19 37th Ave., L. I. City, N. Y.
Continental Car-Na-Var Corp., Brazil, Ind.
Wm. Cooper & Nephews, 1909 Clifton Ave., Chicago
Creco Co., Inc., Creco Bldg., Long Island City, N. Y.
Davies-Young Soap Co., Dayton, O.
Delta Chemical Co., 4 Payson Ave., N. Y.
Eagle Soap Corp., Huntington, Ind.
Emulsol Corp., 59 E. Madison St., Chicago
Fergusson Laboratories, Drexel Bldg., Phila.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Harley Soap Co., Pierce & Orthodox Sts., Phila.
Higley Chem. Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
James Huggins & Son, 239 Medford St., Malden, Mass.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Koppers Co., White Tar Div., Kearny, N. J.
Merck & Co., Rahway, N. J.
Midland Labs., Dubuque, Iowa
National Oil Products Co., Harrison, N. J.
Palmer Products, Inc., Waukesha, Wisc.
Peck's Prods Co., 5240 N. 2nd St., St. Louis
Puritan Chem. Co., Atlanta, Ga.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Germicide Co., Rochester, N. Y.
Sherwin-Williams Co., 601 Canal Rd., Cleveland, Ohio
Shores Co., Cedar Rapids, Ia.
Solshine Mfg. Co., 412—2nd St., Fall River, Mass.
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Tesco Chem. Co., P. O. Box 4748, Atlanta
Uncle Sam Chemical Co., 329 E. 29th St., N. Y.
U. S Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Vliet & Co., 638 Monroe St., Brooklyn
West Disinfecting Co., Long Island City, N. Y.
Western Chem. & Mfg. Co., 4032 S. Wentworth Ave., Chicago
York Chemical Co., 424 W. 18th St., N. Y.

DISINFECTANTS, Synthetic

Baird & McGuire, Inc., Holbrook, Mass.
Baird & McGuire, Inc., St. Louis
Fuld Bros., 702 S. Wolfe St., Baltimore
Higley Chem. Co., Dubuque, Ia.
R. M. Hollingshead Corp., Camden, N. J.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Monsanto Chem. Co., St. Louis
Puritan Chem. Co., Atlanta, Ga.

DISINFECTANTS, COEFFICIENT TESTS (see LABORATORIES)

DISPENSERS, Liquid Soap (see SOAP DISPENSERS)

DISSEMINATORS, PERFUME (see PERFUME DISSEMINATORS)

DOG REPELLENTS

Acme White Lead Co., Detroit
Ampion Corp., 4-88—47th Ave., Long Island City, N. Y.
California Spray-Chemical Corp., Richmond, Calif.
Chemical Supply Co., Plymouth Bldg., Cleveland
Fuld Bros., 702 S. Wolfe St., Baltimore
Hammond Paint & Chem. Co., Beacon, N. Y.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Midway Chemical Co., 5235 W. 65th St., Chicago
Tobacco By-Products & Chem. Corp., Louisville, Ky.
Trojan Prods. & Mfg. Co., 3130 S. Wabash Ave., Chicago
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

DRAIN PIPE SOLVENT

Ampion Corp., 4-88—47th Ave., Long Island City, N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Banner Chem. Prods. Co., 329 Mulberry St., Newark, N. J.
Cenol Co., 4250 N. Pulaski Ave., Chicago
Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 247 Front St., N. Y.
Cole Laboratories, 22-19—37th Ave., L. I. City, N. Y.
Continental Car-Na-Var Corp., Brazil, Ind.
Creco Co., Inc., Creco Bldg., Long Island City, N. Y.
Delta Chemical Co., 4 Payson Ave., N. Y.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Goulard & Olena, Inc., 140 Liberty St., N. Y.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Hercules Chem. Co., 332 Canal St., New York
Higley Chemical Co., Dubuque, Ia.
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hull Co., 305 Washington St., Brooklyn
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Industrial Labs., 17-19 W. Conway St., Baltimore
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Lewis Soap & Chem. Co., 2210 San Pablo Ave., Oakland, Calif.
Mechling Bros. Chemical Co., Line St. & Cooper's Creek, Camden
Midland Labs., Dubuque, Iowa
North Coast Chem. & Soap Wks., Seattle, Wash.
Palmer Products, Inc., Waukesha, Wisc.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Germicide Co., Rochester, N. Y.
Solshine Mfg. Co., 44 Brookline St., Cambridge, Mass.
John Sunshine Chem. Co., 604 W. Lake St., Chicago
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Trojan Prods. & Mfg. Co., 3130 S. Wabash Ave., Chicago
J. A. Tumbler Labs., 423 Hanover St., Baltimore
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

DRIP MACHINES

Ampion Corp., 47-02 5th St., Long Island City, N. Y.
Chemical Mfg. & Dist. Co., Easton, Pa.
Clifton Chemical Co., 247 Front St., N. Y.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
Garnet Chem. Corp., 911 N. Lumber St., Allentown, Pa.
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Palmer Products, Inc., Waukesha, Wisc.
Rochester Germicide Co., 16 Downing Pl., Rochester.
Geo. B. Robbins Dis. Co., 42 Charlton St., Boston
Uncle Sam Chem. Co., 329 E. 29th St., N. Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
West Disinfecting Co., Long Island City, N. Y.

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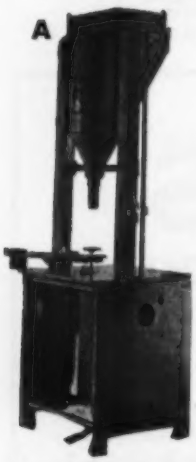

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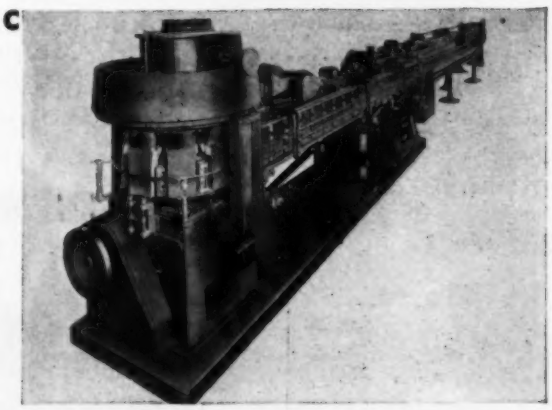

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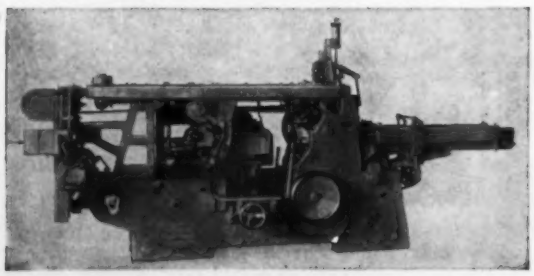

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C. T. Small Mfg. Co., 1204 Ferguson Ave., St. Louis, Mo.
Sprague-Sells Corp., 308 W. Washington St., Chicago
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
Stokes & Smith Co., 4915 Summerdale Ave., Phila.
F. J. Stokes Machine Co., 5918 Tabor Rd., Philadelphia
Triangle Package Machy. Co., 910 N. Spaulding Ave., Chicago
Vol-U-Meter Co., 707 Ohio St., Buffalo, N. Y.
Weigh Right Automatic Scale Co., Joliet, Ill.

FILLING MACHINERY (Pastes, Drums)

Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
Stokes & Smith Co., 4915 Summerdale Ave., Phila.

FILLING MACHINERY (Pastes, Tubes)

Clevon Products Co., 27-31 Mechanic St., Buffalo
Arthur Colton Co., Detroit, Mich.
Consolidated Prod. Co., 15 Park Row, N. Y. (Used)
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
Karl Kiefer Machine Co., 919 Martin St., Cincinnati
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
Scientific Filter Co., 12 Franklin Sq., N. Y.
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
F. J. Stokes Machine Co., 5918 Tabor Rd., Philadelphia

FILLING MACHINERY (Free flowing dry products)

Automatic Scale Co., 591 Hudson St., N. Y.
Consoldiated Package Machinery Corp., 1400 West Ave., Buffalo, N. Y.
Consolidated Prod. Co., 15 Park Row, N. Y. (Used)
J. H. Day Co, 1144 Harrison Ave, Cincinnati
J. L. Ferguson Co., Joliet, Ill.
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
B. F. Gump Co., 412 S Clinton St., Chicago
S. Howes Co., Silver Creek, N. Y. (Bbls.)
Johnson Automatic Sealer Co., Battle Creek, Mich.
Modern Packaging Machy. Co., Danville, Ill.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
Pneumatic Scale Corp., North Quincy, Mass.
F. B. Redington Co., 112 S. Sangamon St., Chicago
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
Sprout, Waldron & Co., Muncy, Pa.
F. J. Stokes Mach. Co., 5918 Tabor Rd., Philadelphia
Stokes & Smith Co., 4915 Summerdale Ave., Phila.
Triangle Package Machinery Co., 906 N Spaulding Ave., Chicago
Weigh Right Automatic Scale Co., Joliet, Ill.

FILTER AIDS

Amer. Cyanamid & Chem. Corp., Rockefeller Plaza, N. Y.
Johns Manville Corp., 22 E. 40th St., N. Y.
Dicalite Co., 120 Wall St., N. Y.
A. E. Starkie, 5461 W. Division St., Chicago
Tamms Silica Co., 229 N. La Salle St., Chicago

FILTER CLAYS (see CLAYS)

FILTER CLOTHS

Abbott Associates, 417 Park Sq. Bldg., Boston
Alsop Engineering Corp., 100 High St., Milldale, Conn.
Cleveland Wire Cloth & Mfg. Co., 3574 E. 78th St., Cleveland
Filter Paper Co., 57 E. 24th St., Chicago
B. F. Gump Co., 431 S. Clinton St., Chicago
Wm. E. Hooper & Sons, Juniper & Cherry Sts., Philadelphia
Independent Filter Press Co., 189 Seventh St., Brooklyn
National Filter Cloth & Weaving Co., 220 E. 42nd St., N. Y.
Newark Wire Cloth Co., 223 Verona Ave., Newark, N. J.
Oliver United Filters, Inc., 33 W. 42nd St., N. Y.
J. T. Perkins Co., 669 Kent Ave., Brooklyn
Wm. R. Perrin & Co., 349 W. 23rd St., Chicago
Scientific Filter Co., 12 Franklin Sq., N. Y.
T. Shriver & Co., Harrison, N. J.
D. R. Sperry & Co., Batavia, Ill.

FILTER PAPER

Alsop Engineering Corp., 100 High St., Milldale, Conn.
H. Reeve Angel & Co., 7 Spruce St., N. Y.
A. C. Drury & Co., 219 East North Water St., Chicago, Ill.
Filter Paper Co., 57 E. 24th St., Chicago
General Chemical Co., 40 Rector St., N. Y.
August Giese & Son, 121 E. 24th St., N. Y.
Karl Kiefer Machine Co., Cincinnati, O.
Geo. Lueders & Co., 427 Washington St., N. Y.
Magnus, Mabee & Reynard, 16 Desbrosses St., N. Y.
Orbis Products Corp., 215 Pearl St., N. Y.
Palo Co., 81 Reade St., N. Y.
Scientific Filter Co., 12 Franklin Sq., N. Y.
T. Shriver & Co., Harrison, N. J.

FILTER PRESSES

Alsop Engineering Corp., 100 High St., Milldale, Conn.
Consolidated Prods Co., 15 Park Row, N. Y. (Used)
Ertel Engineering Corp., Kingston, N. Y.
Filter Paper Co., 57 E. 24th St., Chicago
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
Independent Filter Press Co., 189 Seventh St., Brooklyn
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
Oliver United Filters, Inc., 33 W. 42nd St., N. Y.
Patterson Foundry & Machine Co., East Liverpool, Ohio
Wm. R. Perrin & Co., 349 W. 23rd St., Chicago
Scientific Filter Co., 12 Franklin Sq., N. Y.
T. Shriver & Co., Harrison, N. J.
Sparkler Mfg. Co., 201 Lake St., Mundelein, Ill.
D. R. Sperry & Co., Batavia, Ill.
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
United Filters Corp., Hazelton, Pa.

FILTERING MATERIALS (see also CLAYS, FILTER AIDS, and DECOLORIZING CARBON)

American Colloid Corp., 363 W. Superior St., Chicago
Dicalite Co., 120 Wall St., New York
Filtrol Corp., 315 W. 5th St., Los Angeles
Industrial Chem. Sales Div., West Va. Pulp and Paper Co., 230 Park Ave., N. Y
Innis-Speiden & Co., 117 Liberty St., New York
Johns-Manville Corp., 22 East 40th St., New York
Peerless Clay & Mineral Co., Pueblo, Colo.
A. E. Starkie, 5461 W. Division St., Chicago
Witco Chemical Co., 295 Madison Ave., N. Y.

FILTERS (Special)

Alsop Engineering Corp., 100 High St., Milldale, Conn.
S. F. Bowser & Co., 1302 E. Creighton Ave., Ft., Wayne, Ind.
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
Cuno Engineering Co., Meriden, Conn.
Ertel Engineering Corp., Kingston, N. Y.
Filter Paper Co., 57 E. 24th St., Chicago
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
Foster Pump Wks., Inc., 54 Washington St., Brooklyn
Jacob House & Sons, 52 St. Paul St., Buffalo
Karl Kiefer Machine Co., 919 Martin St., Cincinnati
Lancaster Iron Works, Lancaster, Pa.
Mixing Equipment Co., 1067 Garson Ave., Rochester
Newman Tallow & Soap Machy. Co., 1051 W. 35 St., Chicago (Used)
Oliver United Filters, Inc., 33 W. 42nd St., N. Y.
Permutit Co., 330 W. 42nd St., N. Y.
Scientific Filter Co., 12 Franklin Sq., N. Y.
T. Shriver & Co., Harrison, N. J.
Sparkler Mfg. Co., 201 Lake St., Mundelein, Ill.
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
U. S. Bottlers Machy. Co., 4015 N. Rockwell St., Chicago
Whiting Corp., Harvey, Ill.

FIRE EXTINGUISHER FLUID (See CARBON TETRACHLORIDE)

FIRE-PROOFING COMPOUNDS

Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Fuld Bros., 702 S. Wolfe St., Baltimore
Glyco Products Co., 230 King St., Bklyn.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Monsanto Chemical Co., 1724 South Second St., St. Louis
Niacet Chemicals Corp., Niagara Falls, N. Y.
Price Fire & Water Proofing Co., Poughkeepsie, N. Y.
Protexol Corp., 32 Market St., Kenilworth, N. J.
Victor Chemical Works, 141 West Jackson Bldg., Chicago
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

FISH OILS

(see also Brokers and Dealers)

Atlantic Products Corp., Commercial Trust Bldg., Phila.
Atlas Refinery, Lockwood St., Newark, N. J.
Falk & Co., Pittsburgh
Hooker Electrochemical Co., Niagara Falls, N. Y.
Murray Oil Products Co., 21 West St., N. Y.
National Oil Products Co., Harrison, N. J.
Pacific Vegetable Oil Co., 62 Townsend St., San Francisco
J. H. Redding, Inc., 17 Battery Place, N. Y.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
A. E. Starkie Co., 5461 W. Division St., Chicago
Swan Finch Oil Corp., 30 Rockfeller Plaza, N. Y.
Arthur C. Trask Co., 4103 S. La. Salle St., Chicago
Welch, Holme & Clark Co., 563 Greenwich St, N. Y.

FISH OIL SOAPS

James Good, Inc., 2116 E. Susquehanna Ave., Phila.
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
National Oil Products Co., Harrison, N. J.
Newell Gutradt Co., 350 Fremont St., San Francisco
North Coast Chem. & Soap Works, Seattle, Wash.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Silmo Chemical Co., Vineland, N. J.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
Thompson-Hayward Chem. Co., Kansas City, Mo.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

FIXATIVES, PERFUME (See ESSENTIAL OILS)

FLAKE SOAPS (see CHIP SOAPS)

FLOATING SOAPS

Armour & Co., 1355 W. 31st St., Chicago
Beach Soap Co., Lawrence, Mass.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Cudahy Packing Co., 221 N. La Salle St., Chicago
J. Eavenson & Sons, Camden, N. J.
Haskins Bros. & Co., Omaha
Hewitt Soap Co., Dayton, Ohio
Iowa Soap Co., Burlington, Iowa
Lightfoot Schultz Co., 663 Fifth Ave., N. Y.
Procter & Gamble Co., Cincinnati
Geo. A. Schmidt & Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Chicago
M. Werk Co., Cincinnati, O.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

FLOOR FINISHES (Non-Wax)

Ampion Corp., 4-88—47th Ave., Long Island City, N. Y.
Candy & Co., 2515 W. 35th St., Chicago
Chemical Compounding Corp., 262 Huron St., Bklyn.
Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 247 Front St., N. Y.
Continental Car-Na-Var Corp., Brazil, Ind.
Davies-Young Soap Co., Dayton, O.
Delta Chem. Co., 4 Payson Ave., N. Y.
Eagle Soap Corp., Huntington, Ind.
Empire Chemical Prods. Co., 10 Longworth St., Newark, N. J.
Federal Varnish Co., 337 S. Peoria St., Chicago
Franklin Research Co., 5134 Lancaster Ave., Phila.
Fuld Bros., 702 S. Wolfe St., Baltimore
P. D. George Co., 5200 N. 2nd St., St. Louis
Higley Chemical Co., Dubuque, Iowa
Hockwald Chemical Co., 135 Mississippi St., San Francisco
Hysan Prods. Co., 58 E. Cullerton St., Chicago
La Maison Prods., Inc., 80 York St., Brooklyn
Lewis Soap & Chem. Co., Oakland, Calif.
Midland Labs., Dubuque, Iowa
National Oil Products Co., Harrison, N. J.
Palmer Products, Inc., Waukesha, Wisc.
Peck's Products Co., St. Louis
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Solshine Mfg. Co., 412—2nd St., Fall River, Mass.
L. Sonneborn Sons, Inc., 88 Lexington Ave., N. Y.
S. S. Stafford, Inc., 603 Washington St., N. Y.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco

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An extremely hard, durable finish that will not rubber-burn on gymnasium floors and which has such remarkable resistance to wear and abuse, it can be used on all types of interior or exterior surfaces including dance floors, school furniture, desks, seats, etc. Applied with a lamb's-wool mop, applicator or cheesecloth pad.

G. F. B. No. 2
This is No-Burn Gym Finish except made in a standard body for brush application.

G. F. B. No. 3
Is the same remarkably durable finish as No-Burn Gym Finish but intended for use only on surfaces where a hand rubbed finish is desired.

G. F. B. CONCENTRATED BASE COLORS
Highly perfected concentrated base colors for use with No-Burn Gym Finish to impart colors as well as extreme durability on wood, concrete and cement surfaces. Made in Light Oak, Dark Oak, Light Gray, Dark Gray, Walnut, Maroon, Green.

FED-CO PENETRATING SEALER
This is a highly specialized penetrating sealer for wood floors. Seals wood pores, makes a harder, longer wearing floor that is easy to clean. Meets the conditions and requirements of large organizations operating chain units. Applied by spraying or large lamb's-wool applicator. Forms a hard, durable finish that will not stain merchandise accidentally dropped on it.

PENETROIL SEALER
A penetrating sealer, very pale in color, that can be used for sealing either new surfaces or surfaces that have been formerly sealed. It properly fills the pores and is resistant to water.
Especially recommended as a sealer type material for use where subsequent coats of wax are to be applied.

TERRAZZO SEALER
The perfect sealer for terrazzo and marble floors. Reduces cost of maintenance. Prevents penetration of dirt. Very pale.

MOP-VAR
A Penetrating Sealer to be applied with a mop or other applicator. Reduces maintenance and application costs. For wood, concrete, hard mastic or magnesite, cork and cork tile.

LIGHTNING LUSTRE
A wear and water resisting, self-polishing, high lustre carnauba wax base finish of highest quality. For linoleum, congoleum, wood, rubber tile, soft composition and for maintenance of practically any surface.

VAR-LIN
A preservative and polish combining the hardest waxes of best quality, varnish gums and quick drying solvents. Very durable and practically eliminates the slipping hazard. Polishes to a beautiful gloss.

LIQUID OIL BASE WAX
A wax of the oil base type. Applied with a mop or applicator. Buffs and polishes beautifully. A superior product of its type.

NO. 70 RESTORER
Cleanses sealed floors of dirt, dust, grease, rubber burns and other disfigurations, imparts a fine lustre and saves much time over ordinary operations. Ideal for sealed wood, cement, linoleum and other surfaces.

LINOLEUM LACQUER
Specially made for printed, lacquer finished inlaid linoleum and congoleum or Sealex types of linoleum. Dries in 30 minutes, easy to apply and will not cause light, delicate shades to fade or discolor.

GYM FINISH CLEANER AND POLISH
Specially developed for cleaning gymnasium floors, hand ball and basket ball courts, etc. Perfectly cleans rubber shoe marks and other soil, difficult to remove.

LESLIP WATER WAX
A high lustre, self-polishing wax—made to enable you to meet price competition—compares most favorably when tested for brilliance, body, wearing qualities, washability and resistance to slip, with much higher priced products.

LINOLEUM, RUBBER & TERRAZZO CLEANER
Meets perfectly all requirements for a superior cleaner for these surfaces. Keeps the surface always in proper condition and prevents deterioration.

GYM FINISH MARKING ENAMELS
Another Federal specialized product made for marking hand ball courts, basket ball floors, running lanes, etc. Has the remarkable wearing quality of Gym Finish and possesses great covering and hiding power. Made in White, Red, Black, Yellow, Blue, Green, Tan, Ivory, Orange and Jade.

STREET MARKING OR TRAFFIC PAINT
A rapid drying paint for marking traffic lanes, parking spaces and similar uses. For both inside and outside use. Dries for traffic use in 30 minutes. Has remarkable wearing quality necessary for a product of this kind.

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FLOOR FINISHES (Non-Wax) (Contd.)

Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Twin City Shellac Co., 340 Flushing Ave., Brooklyn
Uncle Sam Chem. Co., 329 E. 29th St., N. Y.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Victory Chem. Co., 148 Fairmount Ave., Phila.
T. F. Washburn Co., 2244 Elston Ave., Chicago

FLOOR MACHINES

Adams Prods., Inc., 248 W. Fairfield Ave., St. Paul
Amer. Floor Surfacing Mach. Co., Toledo, O.
Continental Car-Na-Var Corp., Brazil, Ind.
Fay Co., 130 Madison Ave., N. Y.
Finnell System, Inc., Elkhart, Ind.
General Floor Craft Corp., 333 Sixth Ave., N. Y.
Hild Floor Machine Co., 1313 W. Randolph St., Chicago
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Kent Co., Rome, N. Y.
S. C. Lawlor Co., 122 N. Aberdeen St., Chicago
Lincoln-Schlueter Floor Machy. Co.,
220 W. Grand Ave., Chicago
Ponsell Floor Machine Co., 220 W. 19th St., N. Y.

FLOOR SCRAPERS

Central Rubber Prods. Co., 823 Broadway, N. Y.
Churchill Mfg. Co., Galesburg, Ill.
A. F. Dormeyer Mfg. Co., 2640 Greenwich Ave., Chicago
Greenview Mfg. Co., 2557 Greenview Ave., Chicago
Lincoln-Schlueter Floor Machy. Co.,
512 S. Peoria Ave., Chicago
Palmer Products, Inc., Waukesha, Wisc.
White Mop Wringer Co., Fultonville, N. Y.

FLOOR SCRUB SOAPS (see also Potash Soaps)

American Soap & Washoline Co., Cohoes, N. Y.
Ampion Corp., 47-02—5th St., Long Island City, N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Armour & Co., 1355 W. 31st St., Chicago
Baird & McGuire, Inc., of Mo., St. Louis
Banner Chem. Prods. Co., 329 Mulberry St., Newark, N. J.
Baum's Castorine Co., Rome, N. Y.
Candy & Co., 2515 W. 35th St., Chicago
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Clifton Chemical Co., 247 Front St., N. Y.
Continental Car-Na-Var Corp., Brazil, Ind.
Churchill Mfg. Co., Galesburg, Ill.
Cole Laboratories, 22-19 37th Ave., L. I. City, N. Y.
Davies-Young Soap Co., Dayton, O.
Delta Chem. Co., Payson Ave., N. Y.
Eagle Soap Corp., Huntington, Ind.
Empire Chem. Prods. Co., 12 Longworth Ave., Newark, N. J.
Franklin Research Co., 5134 Lancaster Ave., Phila.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 Susquehanna Ave., Phila.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Harley Soap Co., Pierce & Orthodox Sts., Philadelphia.
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Kranich Soap So., 60 Richards St., Brooklyn
Lewis Soap & Chem. Co., 2210 San Pablo Ave. Oakland, Calif.
Midland Labs., Dubuque, Ia.
National Oil Products Co., Harrison, N. J.
Peck's Prods. Co, 5240 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
Puritan Chem. Co., Atlanta, Ga.

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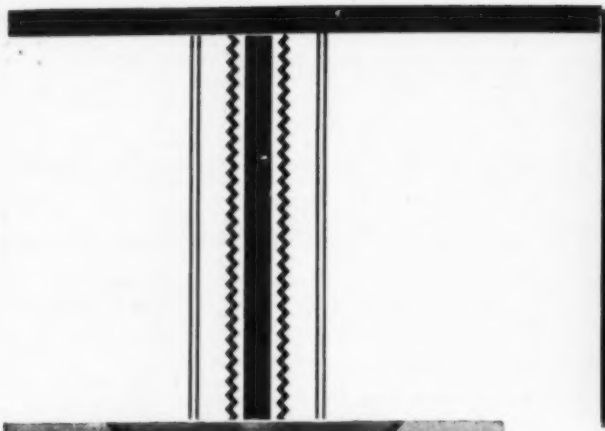

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Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Germicide Co., Rochester, N. Y.
Sanitary Soap Co., 104 Railroad Av. Paterson, N. J.
Solshine Mfg. Co., 412—2nd St., Fall River, Mass.
S. S. Stafford, Inc., 603 Washington St., N. Y.
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Swift & Co., Chicago
Thompson-Hayward Chem. Co., Kansas City, Mo.
Trojan Prods. & Mfg. Co., 3130 S. Wabash Ave., Chicago
J. A Tumbler Labs., 423 Hanover St., Baltimore
Twi-Laq Chemical Co., N. Portland Ave., Bklyn.
Uncle Sam Chemical Co., 329 E. 29th St., N. Y.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Universal Chem. Corp., Akron, O.
Western Chem. & Mfg. Co., 4032 Wentworth Ave., Chicago

FLOOR WAXES

American Wax Co., 13-26 128th St., College Point, L. I.
Ampion Corp., 47-02—5th St., Long Island City, N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Buckingham Wax Corp., Van Dam St., & Borden Ave., L. I. City, N. Y.
Candy & Co., 2515 W. 35th St., Chicago
Cary Mfg. Co., 4917 E. Michigan St., Indianapolis
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg., Dist. Co., Easton, Pa.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods., Co., 3100 Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 247 Front St., N. Y.
Continental Car Na Var Corp., Brazil, Ind.
Davies-Young Soap Co., Dayton, O.
Delta Chem. Co., 4 Payson Ave., N. Y.
Dri-Brite, Inc., 4443 Cook Ave., St. Louis
Economics Laboratory, St. Paul
Empire Chemical Prods. Co., 10 Longworth St., Newark, N. J.
Federal Varnish Co., 337 S. Peoria St., Chicago
Fox Lake Wax Co., Fox Lake, Ill.
Franklin Research Co., 5134 Lancaster Ave., Phila.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 Susquehanna Ave., Phila.
Harley Soap Co., Pierce & Orthodox Sts., Phila.
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hunt Mfg. Co., Lisbon Rd, Cleveland
Hysan Prods. Co., 58 E. Cullerton St., Chicago
La Maison Prods., Inc., 80 York St., Brooklyn
Lewis Soap & Chem. Co., 2210 San Pablo Ave., Oakland, Calif.
Midland Labs., Dubuque, Ia.
M. & H. Laboratories, 2703 Archer Ave., Chicago
Nu Wax On Prods. Mfg. Corp., 317-A 37th St., Brooklyn
Palmer Products, Inc., Waukesha, Wisc.
Peck's Prods., 5240 N. 2nd St., St. Louis
Perrow Chemical Co., Hunt, Va.
Puritan Chem. Co., Atlanta, Ga.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Shawmut Specialty Co., 313 Centre St., Boston
Solshine Mfg. Co., 412—2nd St., Fall River, Mass.
S. S. Stafford, Inc., 603 Washington St., N. Y.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
H. F. Staples Co., Medford, Mass.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Trojan Prods. & Mfg. Co., 3130 S. Wabash Ave., Chicago
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Twi-Laq Chemical Co., 25 N. Portland Ave., Brooklyn
Twin City Shellac Co., 340 Flushing Ave., Brooklyn
Uncle Sam Chemical Co., 329 E. 29th St., N. Y.
U. S. Sanitary Specialties Corp., 435 Western Ave., Chicago
Universal Chem. Corp., Akron, O.
Victory Chem. Co., 148 Fairmount Ave., Phila.
T. F. Washburn Co., 2244 Elston Ave., Chicago
Windsor Wax Co., Inc., 611 Newark St., Hoboken, N. J.

FLOTATION OILS

Armour & Co., 1355 W. 31st St., Chicago
Barrett Co., 40 Rector St., N. Y.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Cliffs Dow Chemical Co., Marquette, Mich.
Crosby Naval Stores, Picayune, Miss.
Darling & Co., 4201 S. Ashland Ave., Chicago
Glidden Co., Southern Pine Chem. Co. Div., Jacksonville, Fla.
A. Gross & Co., 295 Madison Ave., N. Y.
Hardwood Chemical Co., 2 Jersey St., Buffalo, N. Y.
Hercules Powder Co., Wilmington
Industrial Chem. Sales Div., West Va. Pulp & Paper Co., 230 Park Ave., N. Y.
Koppers Co., Koppers Bldg., Pittsburgh
National Aniline & Chemical Div., 40 Rector St., N. Y.
Newport Industries, Inc., 230 Park Ave., N. Y.
Pittsburgh Coal Carbonization Co., Oliver Bldg., Phila.
Reilly Tar & Chemical Corp., Indianapolis, Ind.
Republic Chemical Co., 94 Beekman St., N. Y.
Sherwood Refining Co., Englewood, N. J.
L. Sonneborn Sons, Inc., 88 Lexington Ave., N. Y. C.
Tennessee Eastman Corp., Kingsport, Tenn.
Woburn Chemical Corp., Harrison, N. J.

FLUORIDES

(see also Dealers)

Aluminum Co. of America, Gulf Bldg., Pittsburgh
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
American Fluoride Corp., 151 W. 19th St., N. Y.
Blockson Chemical Co., Joliet, Ill.
Foote Mineral Co., 1609 Summer St., Philadelphia
General Chemical Co., 40 Rector St., N. Y.
Harshaw Chemical Co., 1945 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N. Y.
Lindsay Light & Chem. Co., West Chicago, Ill.
Merck & Co., Rahway, N. J.
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Pfaltz & Bauer, 350 Fifth Ave., N. Y.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Henry Sundheimer, Inc., 103 Park Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.

FLY SPRAYS (see HOUSEHOLD INSECTICIDE SPRAYS)

FOAMING AGENTS (see SAPONIN)

FOOT BATHS (Rubber)

U. S. Rubber Co., Market & South Sts., Passaic, N. J.

FORMALDEHYDE

(see also Brokers and Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Cliffs-Dow Chem. Co., Marquette, Mich.
Delta Chem. & Iron Co., Wells, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Wm. S. Gray Co., 342 Madison Ave., N. Y.
Hercules Powder Co., Wilmington, Del.
Heyden Chem. Co., 50 Union Sq., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mallinckrodt Chemical Work, St. Louis, Mo.
Merck & Co., Rahway, N. J.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.

WURSTER & SANGER, INC.

Contracting and Consulting Chemical Engineers

52nd STREET & S. KENWOOD AVENUE, CHICAGO 15, ILLINOIS

Specialists in the Soap, Glycerine, Fat and Oil Industries

Complete Plants and Engineering Services for:

Crude, Dynamite and C. P. Glycerine
Refining, Bleaching and Deodorizing Oils
Hydrogenation of Oils
Hydrogen
Vegetable Ghee
Vegetable Shortening, Margarine
Salad Oil, Winter Oil
Evaporation in Single, Double and Multiple Effects
Fat Splitting: Eisenlohr Continuous Process
Twitchell and Autoclave Processes
Stearic Acid and Red Oil
Fatty Acid Distillation
Laundry and Toilet Soaps
Oil Extraction and Degreasing
Glue and Gelatine
Continuous Glue Evaporation

Development of Processes, Reports, Investigations

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The improved WURSTER & SANGER Soap Lye Evaporator constitutes a marked advance in calandria design. Positive circulation of liquor in a definite direction has proved to increase the rate of evaporation and promote the separation of large crystals.

The WURSTER & SANGER Sweet-Water Evaporator has fulfilled the long need of complete accessibility for cleaning of tubes. It is equipped with an external heating element which affords high liquid velocity and a high rate of heat transfer.

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Our Continuous Glycerine Refining Plants represent the most modern and economical equipment for the production of Dynamite, High Gravity and C. P. grades from Crude. We have developed a plant which is an improvement over all former methods of distilling glycerine.

Our plants are producing C. P. glycerine in one distillation with yields of over 98% from Soap Lye Crude and low steam consumption. All glycerine is condensed in concentrated form eliminating the handling of sweet-waters. Continuous operation and automatic controls reduce the operating attention to a minimum.

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WURSTER & SANGER Oil Refining and Deodorizing Plants for the production of edible oils are suitable for cottonseed, corn, soya bean, peanut, cocoanut and other oils. Our equipment, processes and services cover completely all phases of this industry.

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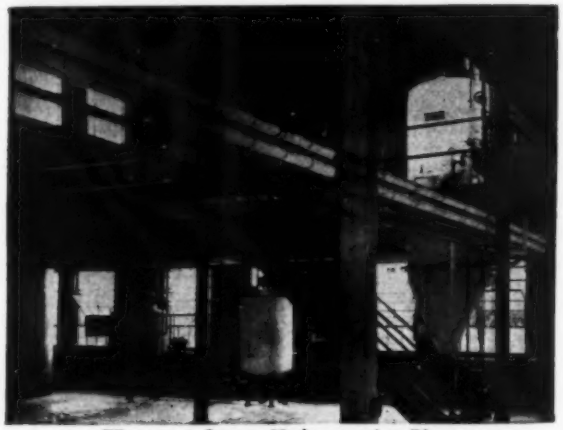
WURSTER & SANGER Oil Hardening Plants are built for partially or completely hardening vegetable oils, fish oils, lard and tallow, for edible and technical purposes.

Our plants are simple, efficient and economical in operation and give uniform products of highest quality.

Wurster & Sanger Continuous Glycerine Distillation Plant



Wurster & Sanger Hydrogenation Plant

W & S CATALYST REDUCER

The operation of the WURSTER & SANGER Wet Catalyst Reducer is completely automatic, resulting in a uniform catalyst of the greatest activity, longest life and less susceptible to poisons. The hazards encountered in dry reduction methods are eliminated. Operating costs are extremely low.

FATTY ACID DISTILLATION

WURSTER & SANGER Fatty Acid Distillation Plants, Continuous and Batch Type, are of improved design and construction throughout. Operation is under high vacuum and at low temperature, producing a superior quality of distilled fatty acids with high yields.

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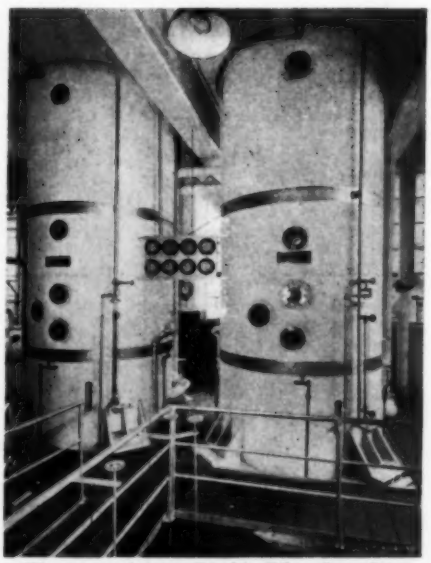
We specialize in the design and building of soap plants. Our Spray-Process Soap Powder Plant is producing soap powder at the lowest production cost.

ESTIMATES AND QUOTATIONS

We are glad to furnish information and quotations covering any equipment from the smallest part of an installation to complete plants for the manufacture of products from fats and oils.

Your inquiries will have our prompt consideration.



Wurster & Sanger Double Effect Soap Lye Glycerine Evaporator

FORMALDEHYDE CANDLES

Bauer & Black, Chicago
Cenol Co., 4250 N. Pulaski Ave., Chicago
Depree Chem. Co., Holland, Mich.

FRAMES (Soap)

Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259 49th St., Brooklyn
Littleford Bros., 451 E. Pearl St., Cincinnati
Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago

FULLERS EARTH

American Colloid Co., 363 W. Superior St., Chicago
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Atlantic Refining Co., 260 S. Broad St., Philadelphia
Attapulgus Clay Co., 260 So. Broad St., Phila.
Chas. B. Chrystal Co., 16 Hudson St., N. Y.
A. C. Drury & Co., 219 East North Water St., Chicago
Filtrol Corp., 634 S. Spring St., Los Angeles
Fullers Earth Co., 2049 E. 100th St., Cleveland
Hammill & Gillespie, 225 Broadway, N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Industrial Chem. Sales Div., West Va. Pulp & Paper Co., 230 Park Ave., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Jas. H. Rhodes & Co., 157 W. Hubbard St., Chicago
L. A. Salomon & Bro., 216 Pearl St., N. Y.
Sinclair Refining Co., East Chicago, Ind.
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
A. E. Starkie Co., 5461 W. Division St., Chicago
Tamms Silica Co., 228 N. La Salle St., Chicago
United Clay Mines Corp., 101 Oakland St., Trenton, N. J.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.
Whittaker, Clark & Daniels, 260 W. Broadway, N. Y.

FUMIGANTS (Cyanides, Chlorpicrin, Methyl Bromide, etc.)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Commercial Solvents Corp., 17 E. 42nd St., N. Y.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Kay-Fries Chemicals, Inc., 180 Madison Ave., N. Y.
Mechling Bros. Chemical Co., Camden, N. J.
Rohm & Haas Co., Inc., 222 W. Washington Sq., Philadelphia
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
U. S. Industrial Chemicals, Inc., 60 E. 42nd St., N. Y.
Wyandotte Chem. Corp., Wyandotte, Mich.

GAS MASKS

Davis Emergency Equip. Co., 43 Halleck St., Newark, New Jersey
Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh, Pa.

GAUGES (see INSTRUMENTS)

GERANIOL (see AROMATIC CHEMICALS)

GERANIUM OIL (see ESSENTIAL OILS)

GERANYL ACETATE (see AROMATIC CHEMICALS)

GLASS BOTTLES and JARS (see BOTTLES)

GLASS and WINDSHIELD CLEANERS

Ampion Corp., 47-02—5th St., Long Island City, N. Y.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Baird & McGuire, Inc., Holbrook, Mass.
Baird & McGuire of Mo., St. Louis
Buck-Jack Co., 3056 Federal St., Baltimore
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 247 Front St., N. Y.
Cole Labs., 22-19—37th Ave., Long Island City.
Delta Chem. Co., 4 Payson Ave., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., Kensington, Phila.
Goulard & Olena, Inc., 140 Liberty St., N. Y.
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hull Co., 305 Washington St., Brooklyn
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Industrial Labs., 17-19 W. Conway St., Baltimore
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Lewis Soap & Chem. Co., Oakland, Calif.
Midland Labs., Dubuque, Ia.
M. & H. Laboratories, 2703-5 Archer Ave., Chicago
National Oil Products Co., Harrison, N. J.
Palmer Products, Inc., Waukesha, Wisc.
Puritan Chem. Co., Atlanta
Theo. B. Robertson Prods. Co., 700 W. Division St.,Chicago
Solshine Mfg. Co., 44 Brookline St., Cambridge, Mass.
John Sunshine Chem. Co., 604 W. Lake St., Chicago
Transmotive Labs., 2550 S. Michigan Ave., Chicago
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Wilco Co., 6800 McKinley Ave., Los Angeles

GLUES (see ADHESIVES)

GLYCERINE (Refined)

Armour & Co., 1355 W. 31st St., Chicago
Century Stearic Acid Candle Wks., 41 E. 42nd St., N. Y.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
E. F. Drew & Co., Wecoline Div., Boonton, N. J.
Garrigues, Stewart & Davies, Inc., 40 Rector St., N. Y.
A. Gross & Co., 295 Madison Ave., N. Y .
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Lever Bros. Co., Cambridge, Mass.
Los Angeles Soap Co., Los Angeles, Calif.
National Oil Products Co., Harrison, N. J.
Leo Pasternak, 110 William St., N. Y. (Brokers)
Procter & Gamble Co., Cincinnati
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
C. J. Schellings & Co., 251 Pearl St., N. Y. (Brokers)
Swift & Co., Union Stock Yards, Chicago
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wrisley Co., 6801 West 65th St., Chicago

GLYCERINE PLANTS AND EQUIPMENT

E. B. Badger Co., 25 Pitts St., Boston
William Garrigue & Co., 9 S. Clinton St., Chicago
Alan Porter Lee, Inc., 136 Liberty St., N. Y.
Ernest Scott & Co., Fall River, Mass.
Swenson Evaporator Co., Harvey, Ill.
Wurster & Sanger, 5201 S. Kenwood Ave., Chicago

GREASES (Fats for Soap)

Armour & Co., 1355 W. 31st St., Chicago
Belleville Rendering Co., Belleville, Ill.
Consolidated Rendering Co., 178 Atlantic Ave., Boston
Cudahy Packing Co., 221 N. La Salle, Chicago
Darling & Co., 4201 S. Ashland Ave., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
Otto A. C. Hagen Co., 929 Ledger Bldg., Philadelphia
Long Island Soap Co.,
Meeker Ave. & Bridgewater St., Brooklyn
N. I. Malmstrom & Co., 147 Lombardy St., Brooklyn
Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago
Willibald Schaefer Co., Foot of Bremen Ave., St. Louis
Werner G. Smith Co., 2191 W. 110th St., Cleveland
Louis Stern Sons, Inc., Produce Exchange, N. Y.
Swift & Co., Chicago
Theobald Industries, Kearny, N. J.
Toledo Tallow Co., Toledo, Ohio
Waltham Tallow Co., Waltham, Mass.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.
Wilson & Co., Union Stock Yards, Chicago
Wilson-Martin Co., Swanson St., Philadelphia
Woburn Chemical Corp., Harrison, N. J.

GREASES, LUBRICATING (See PETROLEUM BASES)

GREEN SOAP (see POTASH SOAP)

GRINDING MACHINERY (for milling, pulverizing, etc.)

Abbe Engineering Co., 50 Church St., N. Y.
American Pulverizer Co., 18th & Austin Sts., St. Louis
C. O. Bartlett & Snow Co., 6200 Harvard Ave., Cleveland
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
Gruendler Patent Crusher & Pulverizer Co.,
900 N. First St., St. Louis
B. F. Gump Co., 412 S. Clinton St., Chicago
Houchin Machy. Co., Hawthorne, N. J.
Huber Machine Co., 259 46th St., Brooklyn
Kent Machine Works, 39 Gold St., Brooklyn
Lancaster Iron Works, Lancaster, Pa.
J. M. Lehmann Co., Lyndhurst, N. J.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago (Used)
Olsen & Tilgner Mfg. Co., 2276 Elston Ave., Chicago
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Prater Pulverizer Co., 1829 S. 55th Ave., Chicago
Chas. Ross & Sons, 150 Classon Ave., Brooklyn
Patterson Foundry & Machine Co., East Liverpool, Ohio
Sprout Waldron & Co., Muncy, Pa.
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
Stephens-Adamson Mfg. Co., Aurora, Ill.
F. I. Stokes Machine Co., Philadelphia, Pa.
Sturtevant Mill Co., Harrison Sq., Boston
Williams Patent Crusher & Pulverizer Co., St. Louis

GUMS

American Cyanamid & Chem. Corp.,
30 Rockefeller Plaza, N. Y.
C. W. Campbell Co., 157 Chambers St., N. Y.
T. G. Cooper & Co., 47 N. 2nd St., Philadelphia
Wm. Diehl & Co., 336 W. 42nd St., N. Y. 18
Dodge & Olcott Co., 180 Varick St., N. Y.
A. C. Drury & Co., 219 East North Water St., Chicago
R. Gesell, Inc., 200 W. Houston St., N. Y.
Gillespie-Rogers-Pyatt, Ltd., 80 John St., N. Y.
Hercules Powder Co., Wilmington, Del.
J. L. Hopkins & Co., 220 Broadway, N. Y.
I. S. Innes Corp., 533 Canal St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
George H. Lincks, 155 John St., N. Y.
Neuman-Buslee & Wolfe, 224 W. Huron St., Chicago
Orbis Products Corp., 215 Pearl St., N. Y.
S. B. Penick & Co., 50 Church St., N. Y.
R. J. Prentiss & Co., 80 John St., N. Y.
J. H. Redding, Inc., 17 Battery Place, N. Y.
R. F. Revson Co., 144 W. 18th St., N. Y.
Rohm & Haas Co., 222 W. Washington Sq., Philadelphia
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
William H. Scheel, Inc., 38 Franklin St., Bklyn.
Stein Hall & Co., 285 Madison Ave., N. Y.
Stephens-Adamson Co., Aurora, Ill.
Stroock & Wittenberg, Lincoln Bldg., N. Y.
Thurston & Bradich, 286 Spring St., N. Y.
Arthur C. Trask Co., 4102 S. La Salle St., Chicago
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

GUMS, FUSED CONGO

Gillespie-Rogers-Pyatt, Ltd., 80 John St., N. Y.
Stroock & Wittenberg, Lincoln Bldg., N. Y.

GUNS, POWDER (see BELLOWS, INSECT POWDER)

GYM-FINISH FLOOR SEAL (see FLOOR FINISHES)

HAND (Mechanic's) SOAP

Ampion Corp., 4-88 47th Ave., Long Island City, N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Armour & Co., 1355 W. 31st St., Chicago
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Buck-Jack Co., 3056 Federal St., Baltimore
Chem. Mfg. & Dist. Co., Easton, Pa.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Columbia Soap & Chem. Co., Inc.,
324 Leavenworth St., San Francisco
Cudahy Packing Co., 221 N. La Salle St., Chicago
Davies Young Soap Co., Dayton, O.
Delta Chemical Co., 4 Payson Ave., N. Y.
Eagle Soap Corp., Huntington, Ind.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
A. C. Fergusson Co., Drexel Bldg., Phila.
Flash Chem. Co., 160 2nd St., Cambridge, Mass.
Fuld Bros., 702 S. Wolfe St., Baltimore
Haag Laboratories, Inc., 6101 S. May St., Chicago
Higley Chem. Co., Dubuque
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Co., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Insto Co., 110 Center St., Los Angeles
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
Mione Mfg. Co., Collingdale, Pa.
National Sanitary Prods. Co., 217 N. 2nd St., St. Louis
North Coast Soap & Chem. Wks., Seattle, Wash.
Palmer Products, Inc., Waukesha, Wisc.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
Puritan Chem. Co., Atlanta, Ga.
Puritan Soap Co., 573 Lyell Ave., Rochester, N. Y.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
Skat Co., Hartford, Conn.
Skotch Prods. Corp., 1220 W. 6th St., Cleveland
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Swift & Co., Chicago
Trojan Products & Mfg. Co.,
3107 S. Wabash Ave., Chicago
J. A. Tumbler Labs., 423 Hanover St., Baltimore
United Cleanser Mfg. Co., Cambridge, Mass.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Utility Co., 636 W. 44th St., N. Y.

SOPAC

SAFETY HAND SOAP

(Powdered)

A money-maker for alert jobbers calling on industrial plants and institutions

★ Hygienically safe—fast and economical

★ Non-abrasive, vegetable oil base

★ Soothing with fine after-effect

★ Tested and approved by millions of safe washups in plants throughout the country

★ Unsurpassed quality and value

★ Free samples available for established jobbers

Other items in the Skotch Products line include dish-washing compounds, medium and heavy duty cleaners, liquid soap concentrate, special formula compounds and powdered soap dispensers.

SKOTCH PRODUCTS CORP.

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HAND (Mechanics') SOAP (Contd.)

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Vliet Soap Co., 638 Monroe St., Brooklyn
Washine-National-Sands, Inc., 37-02 Northern Blvd., Long Island City.

HAND SOAP, Powdered

Ampion Corp., 4-88 47th Ave., Long Island City, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Cenol Co., 4250 N. Pulaski Ave., Chicago
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 247 Front St., N. Y.
J. Eavenson & Sons, Camden, N. J.
Fuld Bros., Baltimore
Hercules Powder Co., Wilmington, Del.
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Co., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Insto Co., 110 Center St., Los Angeles
La Maison Products, Inc., 80 York St., Brooklyn
M. & H. Laboratories, 2705 Archer Ave., Chicago
National Oil Products Co., Harrison, N. J.
Packwood Mfg. Co., St. Louis
Palmer Products, Inc., Waukesha, Wisc.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Port Huron Detergent Co., Port Huron, Mich.
Presto Mfg. Co., Myrtle and Curfew Sts., St. Paul, Minn.
Procter & Gamble Co., Cincinnati
Puritan Chem. Co., Atlanta
Puritan Soap Co., 573 Lyell Ave., Rochester, N. Y.
Theo. B. Robertson Prods. Co.
700 W. Division St., Chicago
Rochester Germicide Co., Rochester, N. Y.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Skotch Products Corp., 1220 W. 6th St., Cleveland
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Swift & Co., Chicago
Trojan Prods. & Mfg. Co., 3130 S. Wabash Ave., Chicago
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Warren Soap Mfg. Co., Cambridge, Mass.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

HARD WATER SOAPS (Salt Water Soaps)

Armour Soap Wks., 1355 W. 31st St., Chicago
Baum's Castorine Co., Rome, N. Y.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
James Counts Soap Co., 2nd & Washington Aves., St. Louis
Cudahy Packing Co., 221 N. LaSalle St., Chicago
Davies-Young Soap Co., Dayton, O.
James Good, Inc., 2116 Susquehanna Ave., Phila.
Harley Soap Co., Pierce & Orthodox Sts., Phila., Pa.
Haskins Bros. & Co., Omaha, Neb.
Hewitt Soap Co., Dayton, Ohio
Higley Chemical Co., Dubuque, Iowa
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Calif.
Los Angeles Soap Co., Los Angeles, Calif.
National Oil Products Co., Harrison, N. J.
National Soap Co., 357 South 25th St., Tacoma, Wash.
Newell Gutradt Co., 350 Fremont St., San Francisco, Cal.
North Coast Soap & Chem. Works, Seattle, Wash.
Peck's Prod. Co., 5224 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Geo. A. Schmidt Co., 236 W. North Ave., Chicago

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For domestic and industrial insecticides

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The established concentrate for household and industrial sprays

Safe, sure, and economical, LETHANE 384 Special has, during the pa five years, demonstrated its high contact killing power, its outstandi speed of action, its ovicidal properties, and its freedom from staini and odor problems.

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The most widely used insecticidal agent for livestock sprays

Quick knockdown, high kill, and outstanding repellency at low co are among the features that, over a period of 14 years, have brough LETHANE 384 to a position of leadership among all insecticidal materia for livestock sprays.

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A powerful concentrate for use in insecticide powders

LETHANE A-70 is a safe, effective killing agent in powders for the contr of roaches, ants and bed bugs. It is outstanding in speed of action a killing power, and shows high residual toxicity. Powders based LETHANE A-70, as recommended, show low toxicity to warm-blood animals and do not require a poison label.

R O H M & H A A S

Manufacturers of Chemicals Including Synthetic Insecticides... Fungicides...

Rohm & Haas Research

For agricultural insecticides and fungicides

LETHANE 60
Contact insecticide for sprays and dusts

LETHANE 60 is successfully replacing a large portion of the rotenone and pyrethrum formerly used in agricultural sprays and dusts. Dusts based on LETHANE 60 and these botanical insecticides have proved their superiority to dusts made with rotenone or pyrethrum alone.

LETHANE B-71
Complete replacement for botanicals in contact dusts

LETHANE B-71 completely replaces rotenone, pyrethrum, and nicotine in contact dusts for the control of aphids, leafhoppers, and other soft-bodied insects. It may be mixed with arsenicals, cryolite or fungicides for low-cost, all-round pest control.

YELLOW CUPROCIDE
Powerful fungicide for sprays and dusts

With its high copper content, chemical stability, and excellent sticking powers, YELLOW CUPROCIDE gives highly effective control of many plant diseases. (YELLOW CUPROCIDE is temporarily unavailable because of war requirements.)

CUPRO-K
An effective agent for control of cherry leaf spot

Sprays made with CUPRO-K form a protective coating that effectively prevents cherry leaf spot. CUPRO-K is non-irritating, easy to handle, has high sticking powers, does not injure the leaves or cause dwarfing of the fruit.

TRITON B-1956
Emulsifier and spreader for agricultural sprays

A combined emulsifier, spreader, and deposit-builder for insecticidal and fungicidal sprays, TRITON B-1956 improves spray coverage, giving close-knit and uniform deposits. It conserves spray materials, reduces over-all costs.

TRITON X-100
An emulsifying agent for agricultural sprays

TRITON X-100 is an effective emulsifier for agricultural applications, and also finds use as a wetting agent in the manufacture of wettable sulphur.

For additional information on any of these Rohm & Haas products, write or call our nearest office—Philadelphia, Chicago, Kansas City, Mo., Oakland and South Gate, Calif. Canadian Distributor: P. N. Soden & Co., Ltd., Montreal and Toronto.

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Plastics... Enzymes... Chemicals for the Leather, Textile and Other Industries

PERFUME OILS *For*

INSECTICIDES
FLY SPRAYS
THEATER SPRAYS
CLEANSERS
DETERGENTS
POLISHES
DISINFECTANTS
DEODORANT BLOCKS

If you're having difficulty in procuring the right odor for your needs—try Givaudan! We have an extensive range of highest quality materials to meet your problem.

Long experience in the creation and compounding of perfumes and deodorants for special needs is available for your assistance.

Your inquiry will bring prompt and considered attention. Send us an unperfumed sample of your product and we will be glad to give recommendations to meet your formula.

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HARD WATER SOAPS (Contd.)

John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Union Stock Yards, Chicago
Vliet Soap Co., 638 Monroe St., Brooklyn
Warren Soap Mfg. Co., Cambridge, Mass.
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wrisley Co., 6801 W. 65th St., Chicago, Ill.
Chas. W. Young & Co., 1247 N. 26th St., Philadelphia

HELIOTROPIN (see AROMATIC CHEMICALS)

HOLDERS (Deodorizing Block)

(see also Cans, Fibre)

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Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Cin-Made Corp. (fibre), 294 Eggleston Ave., Cincinnati
Clifton Chemical Co., 247 Front St., N. Y.
Eagle Soap Corp., Huntington, Ind.
Edelman Co., 6249 S. St. Lawrence Ave., Chicago
Elkay Products Corp., 323 W. 16th St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
Garnet Chem. Corp., 911 N. Lumber St., Allentown, Pa.
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
National Sanitary Chem. Co., Baltimore, Md.
Palmer Products, Inc., Waukesha, Wisc.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Germicide Co., 16 Downing Pl., Rochester N. Y.
Uncle Sam Chem. Co., 329 E. 29th St., N. Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

HOMOGENIZERS (DISPERSION EQUIPMENT)

Abbe Engineering Co., 50 Church St., N. Y.
Manton-Gaulin Mfg. Co., 19 Charlton St., Everett, Mass.
Wurster & Sanger, 5201 S. Kenwood Ave., Chicago

HORTICULTURAL SPRAY BASE (see PETROLEUM BASES)

HOUSEHOLD AMMONIA (prepared, in bulk and private brand)

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Clifton Chemical Co., 247 Front St., N. Y.
Cole Labs., 22-19—37th Ave., Long Island City
Fergusson Laboratories, Drexel Bldg., Philadelphia
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., Kensington, Phila.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Hockwald Chem. Co., 30 Bluxome St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Merck & Co., Rahway, N. J.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago, Ill.
Shores Co., Cedar Rapids, Iowa
John T. Stanley Co., Inc., 642 W. 30th St., N. Y.
Thompson Hayward Chem. Co., Des Moines, Iowa
Trojan Prods. & Mfg. Co., 3130 S. Wabash Ave., Chicago
Washine-National-Sands, Inc., 37-02 Northern Blvd., Long Island City

HOUSEHOLD INSECTICIDE BASE (see PETROLEUM BASES)

HOUSEHOLD INSECTICIDES, LIQUID

American Mothproof Co., 2330 W. View St., Los Angeles
Ampion Corp., 4-88 47th Ave., Long Island City, N. Y.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Cal.
Antiseptol Co., 5524 Northwest Highway, Chicago
Baird & McGuire, Inc., Holbrook, Mass.
Baird & McGuire Inc. of Mo., St. Louis
Banner Chemical Co., 329 Mulberry St., Newark, N. J.
Barton Chemical Co., 3907 S. Langley Ave., Chicago
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Brilco Labs., 947-61st St., Bklyn.
Cary Mfg. Co., 4917 E. Michigan St., Indianapolis
Cenol Co., 4250 N. Pulaski Ave., Chicago
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Supply Co., Plymouth Bldg., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 247 Front St., N. Y.
Columbia Soap & Chem. Co., Inc., 324 Leavenworth St., San Francisco
Davies-Young Soap Co., Dayton, O.
Delta Chemical Co., 4 Payson Ave., N. Y.
C. B. Dolge Co., Westport, Conn.
Elkay Products Corp., 323 W. 16th St., N. Y.
Eagle Soap Corp., Huntington, Ind.
Edelman Co., 6249 S. St. Lawrence Ave., Chicago
Exterminating Materials Co., 555 W. 22nd St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 Susquehanna Ave., Phila.
Goulard & Olena, 140 Liberty St., N. Y.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Harley Soap Co., Pierce & Orthodox Sts., Phila.
Harrison Oil Co., 5110 N. 35th St., Milwaukee
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
James Huggins & Son, 239 Medford St., Malden, Mass.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
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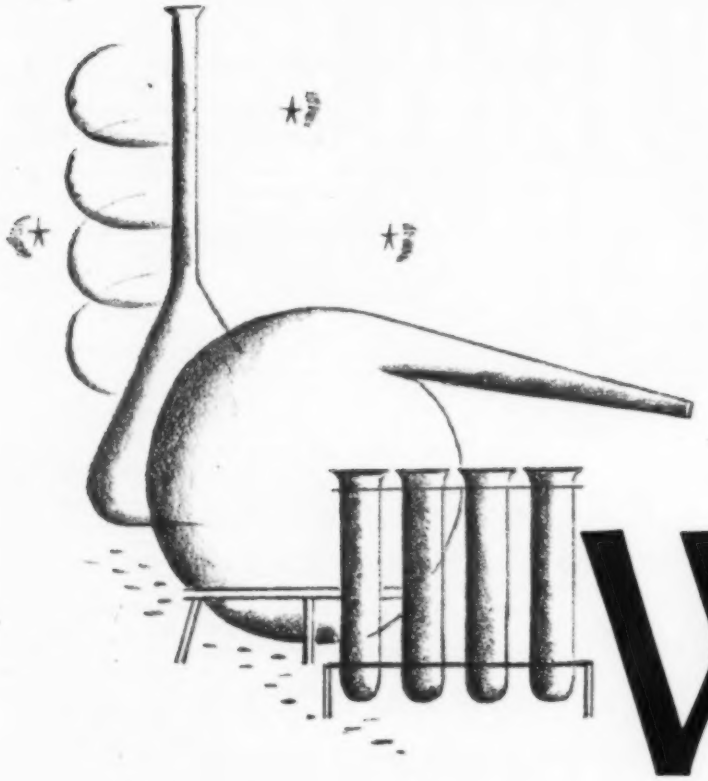
Lewis Soap & Chem. Co., Oakland, Calif.
Maywood Pest Exterminators, Maywood, Ill.
McCormick & Co., Baltimore, Md.
M. & H. Laboratories, 2703-5 Archer Ave., Chicago
Midland Labs., Dubuque, Ia.
Midway Chemical Co., 5235 W. 65th St., Chicago
Edgar A. Murray Co., 2703 Guoin St., Detroit
National Sanitary Prods. Co., 217 N. 2nd St. St. Louis
John Opitz Inc., 50-14—39th St., L. I. City
Palmer Products, Inc., Waukesha, Wisc.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Perrow Chem. Co., Hurt, Va.
Puritan Chem. Co., Atlanta
Rex Research Corp., Toledo
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Germicide Co., Rochester, N. Y.
Schaeffer Bros. & Powell Mfg. Co., 102 Barton St., St. Louis, Mo.
Selig Co., 336 Marietta St., Atlanta, Ga.
Shell Oil Co., Inc., 50 W. 50th St., N. Y.
Shores Co., Cedar Rapids, Ia.
Sinclair Refining Co., East Chicago, Ind.
Solshine Mfg. Co., 44 Brookline St., Cambridge, Mass.
S. S. Stafford, Inc., 603 Washington St., N. Y.
Standard Oil Co., of Calif., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
Standard Oil Co. (Ohio), Midland Bldg., Cleveland
Thompson-Hayward, 2915 S. W. Blvd., Kansas City
Trojan Products & Mfg. Co., 3130 S. Wabash Ave., Chicago



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An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Cal.
Associated Chemists, Inc., 1906 N. Halstead, Chicago
Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Clifton Chemical Co., 247 Front St., N. Y.
Cole Labs., 22-19 37th Ave., L. I. City, N. Y.
Eagle Soap Corp., Huntington, Ind.
Elkay Products Corp., 323 W. 16th St., N. Y.
Exterminating Materials Co., 555 W. 22nd St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
Goulard & Olena, Inc., 140 Liberty St., N. Y.
Haag Laboratories, 6101 S. May St., Chicago
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
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Hysan Prods. Co., 58 E. Cullerton St., Chicago
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McCormick & Co., Inc., Baltimore, Md.
McLaughlin Gormley King Co., 1715—5th St., S. E., Minneapolis, Minn.
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Midway Chemical Co., 5235 W. 65th St., Chicago
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Shores Co., Cedar Rapids, Ia.
S. S. Stafford, Inc., 603 Washington St., N. Y.
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Eastern Industries, Inc., Ridgefield, N. J.
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Hooker Electrochemical Co., Niagara Falls, N. Y.
Spencer Kellogg & Sons, Buffalo, N. Y.
Procter & Gamble Co., Cincinnati, O.
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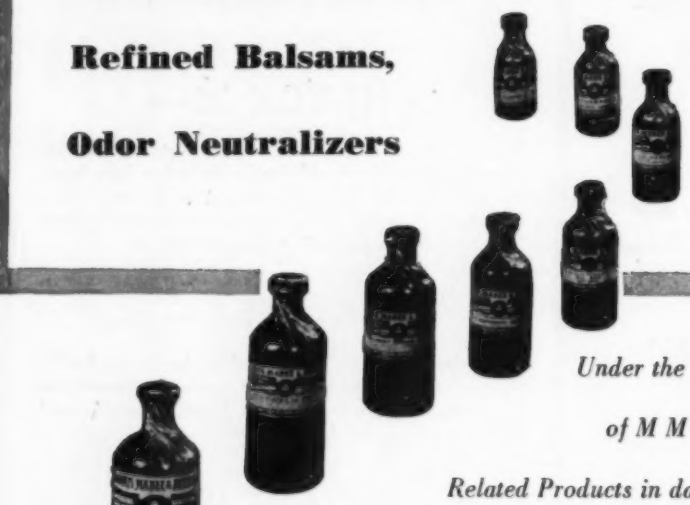

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E. I. Du Pont de Nemours & Co., Wilmington, Del.
Monsanto Chem. Co., St. Louis
Richards Sales Corp., Warren & Morris St., Jer. City, N. J.
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila.
Royce Chem. Co., Carlton Hill, N. J.

HYDROXYCITRONELLAL (see AROMATIC CHEMICALS)

HYPOCHLORITES (see CHLORINE) (see LAUNDRY BLEACH)

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INSECT FLOWERS (see PYRETHRUM)

INSECT POWDER (see PYRETHRUM)

INSECT POWDER GUNS (see BELLOWS)

INSECTICIDE BASE OILS (see PETROLEUM BASES)

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Associated Chemists, Inc., 1906 N. Halsted Ave., Chicago
Chipman Chem. Co., Bound Brook, N. J.
Dodge & Olcott Co., 180 Varick St., N. Y.
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Geigy & Co., 89 Barclay St., N. Y.
Hercules Powder Co., Wilmington, Del.
John Powell & Co., 114 E. 32nd St., N. Y.
Rohm & Haas, Inc., 222 W. Washington Sq., Phila.
U. S. Industrial Chem. Inc., 60 E. 42nd St., N. Y.
Velsicol Corp., 120 E. Pearson St., Chicago
Whitmire Research Corp., 339 E. Vandeventer, St. Louis

INSECTICIDE SPRAY PERFUMES (see also PERFUMING MATERIALS)

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Aromatic Products, Inc., 15 E. 30th St., N. Y.
Bush Pan American, Ltd., 136 Liberty St., N. Y.
Antoine Chiris Co., Inc., 115 E. 23rd St., N. Y.
Compagnie Duval, 121 E. 24th St., N. Y.
Dodge & Olcott Co., 180 Varick St., N. Y.
P. R. Dreyer Inc., 119 W. 19th St., N. Y.
E. I. Du Pont de Nemours, Wilmington, Del.
Felton Chemical Co., 603 Johnson Ave., Brooklyn
Rene Forster, 404—4th Ave., N. Y.
Benj. French, Inc., 160 Fifth Ave., N. Y. C.
Fritzsche Bros., Inc., 76 Ninth Ave., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
Geo. Lueders & Co., 427 Washington St., N. Y. C.
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Fire Point	185°	—195° F.
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Distillation End Point	485°	—495° F.
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Schimmel & Co., 601 W. 26th St., N. Y.
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Tombarel Prods. Corp., 12 E. 42nd St., N. Y.
Van Dyk & Co., Belleville, N. J.

INSECTICIDE SPREADERS (See Clays)

INSECTICIDE TESTING (see LABORATORIES)

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Pneumercator Co., Sperry Bldg., Brooklyn
Precision Thermometer Co., 1434 Brandywine St., Phila.
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Republic Flow Meters Co., 2240 Diversey Blvd., Chicago
W. A. Taylor & Co., 7300 York Rd., Baltimore
Taylor Instrument Co., Rochester, N. Y.

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ISO-PROPYL ALCOHOL (see ALCOHOL, ISO-PROPYL)

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JASMIN, ARTIFICIAL (see AROMATIC CHEMICALS)

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Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259—46th St., Brooklyn
Lancaster Iron Works, 564 S. Prince St., Lancaster, Pa.
Littleford Bros., 443 E. Pearl St., Cincinnati
Newman Tallow & Soap Machy. Co., 1051 W. 35th St. Chicago
Patterson Foundry & Machine Co., East Liverpool, O.
Pfaudler Co., 89 East Ave., Rochester, N. Y.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Sowers Mfg. Co., 1296 Niagara St., Buffalo, N. Y.
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
F. J. Stokes Mach. Co., Philadelphia, Pa.
Struthers-Wells Co., Warren, Pa.
Stuart & Peterson Co., Burlington, N. J.
H. B. Trout Co., 240 Ohio St., Buffalo, N. Y.

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Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
Economic Machinery Corp., Worcester, Mass.
Edward Ermold Co., 652-64 Hudson St., N. Y.
J. L. Ferguson Co., Joliet, Ill.
Filter Paper Co., 57 E. 24th St., Chicago
First Machy. Corp. 819 E. 9th St., N. Y. (Used)
National Labeling Machine Co., 129 W. 19th St., Long Island City, N. Y.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago (Used)
New Jersey Machine Corp., Hoboken, N. J.
Pneumatic Scale Corp., North Quincy, Mass.
F. B. Redington Co., 112 S. Sangamon St., Chicago
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
Scientific Filter Co., 12 Franklin Square, N. Y.

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New Jersey Machine Corp., Hoboken, N. J.
Pneumatic Scale Corp., North Quincy, Mass.
Scientific Filter Co., 12 Franklin Square, N. Y.
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Foxon Co., Providence, R. I.
Henderson Lithographing Co., Norwood, Cincinnati
R. J. Kittredge Co., 812 W. Superior St., Chicago
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Entomological Testing Labs., 114 E. 32nd St., N. Y.
Hochstadter Laboratories, Inc., 18 E. 41st St., N. Y.
Illinois Chemical Labs., Gridley, Ill.
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Samuel P. Sadtler & Son, 210 S. 13th St., Phila.
Seil, Putt & Rusby, 16 E. 34th St., N. Y.
Skinner & Sherman, 246 Stuart St., Boston
Foster D. Snell, 305 Washington St., Brooklyn
Stillwell & Gladding, 130 Cedar St., N. Y.

LABORATORY ANIMALS

Albino Farms, Red Bank, N. J.
Breeding & Lab. Inst., 619 Kent Ave., Brooklyn

LABORATORY APPARATUS

Central Scientific Co., 1700 W. Irving Pk., Chicago
Eastern Engineering Co., 45 Fox St., New Haven, Conn.
Eimer & Amend, 633 Greenwich St., N. Y.
Fisher Scientific Co., Pittsburgh
Emil Greiner Co., 161—6th Ave., N. Y.
Laboratory Construction Co., 111 Holmes St., Kansas City, Mo.
Scientific Materials Co., Pittsburgh
Arthur H. Thomas Co., Wash Sq., Phila.
Will Corp., Rochester, N. Y.

LABORATORY CHEMICALS

J. T. Baker Chemical Co., Phillipsburg, N. J.
General Chemical Co., 40 Rector St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Mallinckrodt Chemical Works, 3600 N. 2nd St., St. Louis
Merck & Co., Rahway, N. J.
Pfaltz & Bauer, Inc., 350 5th Ave., N. Y.

LANOLIN

Bopf-Whittam Corp., Linden, N. J.
Botany Worsted Mills, 1450 Bway, N. Y.
Hummel Chemical Co., 90 West St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Lanaetex Prods. Sales Corp., Elizabeth, N. J.
N. I. Malmstrom & Co., 147 Lombardy St., Brooklyn
Merck & Co., Rahway, N. J.
Pfaltz & Bauer, Inc., 350 5th Ave., N. Y.
Robinson-Wagner Co., 110 E. 42nd St., N. Y.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Welch, Holme & Clark, 563 Greenwich St., N. Y.

LAUNDRY BLEACH (Sodium Hypochlorite)

American Soap & Washoline Co., Cohoes, N. Y.
Chemical Mfg. & Dist. Co., Easton, Pa.
Chrisman Supply Co., Fayetteville, N. Y.
Delta Chemical Mfg. Co., 2101 Washington Blvd., Baltimore
Higley Chemical Co., Dubuque, Iowa
Hysan Products Co., 58 E. Cullerton St., Chicago
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Legrand Bleach Corp., 111-49th St., Brooklyn
Mathieson Alkali Wks., 60 E. 42nd St., N. Y.
Monsanto Chemical Co., St. Louis, Mo.
Peck's Prods. Co., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Pittsburgh Plate Glass Co., Columbia Chemical Div., Grant Bldg., Pittsburgh
E. M. Sergeant Pulp & Chem. Co., 350 Fifth Ave., N. Y.
Surpass Chemical Co., Albany, N. Y.
Thompson-Hayward Chemical Co., Kansas City, Mo.
Jos. Turner & Co., Ridgefield, N. J.
Westvaco Chlorine Prods. Co., 405 Lexington Ave., N. Y.
Washine-National-Sands, Inc., 37-02 Northern Blvd., Long Island City

LAUNDRY BLUE

American Soap & Washoline Co., Cohoes, N. Y.
Brilco Labs., 947—61st St., Brooklyn
Cowles Detergent Co., 7016 Euclid Ave., Cleveland
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
Fezandie & Sperrle, 205 Fulton St., N. Y.
Interstate Color Co., 5 Beekman St., N. Y.
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Napthole, Inc., 15 E. 26th St., N. Y.
National Aniline & Chemical Co., 40 Rector St., N. Y.
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Pylam Products Co., 799 Greenwich St., N. Y.
Washine-National-Sands, Inc., 37-02 Northern Blvd., Long Island City
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

LAUNDRY SOAP, CAKE

American Soap & Washoline Co., Cohoes, N. Y.
Armour Soap Wks., 1355 W. 31st St., Chicago
Beach Soap Co., Lawrence, Mass.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Cudahy Packing Co., 221 N. La Salle St., Chicago
Du Bois Soap Co., Cincinnati, O.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Fels & Co., Philadelphia
Haskins Bros. & Co., Omaha
Hewitt Soap Co., Dayton, O.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Long Island Soap Co., Meeker Ave. & Bridgewater St., Brooklyn
Los Angeles Soap Co., Los Angeles, Calif.
Manhattan Soap Co., Bristol, Pa.
Geo. E. Marsh Co., 200 Broadway, Cambridge, Mass.
National Soap Co., 357 S. 25th St., Tacoma, Wash.
Newell Gutradt Co., 350 Fremont St., San Francisco, Cal.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
North Coast Chem. & Soap Wks., Seattle, Wash.
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Union Stock Yards, Chicago
Vliet Soap Co., 638 Monroe St., Brooklyn, N. Y.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Miss.
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wrisley Co., 6801 W. 65th St., Chicago, Ill.
Chas. W. Young & Co., 1247 N. 26th St., Phila.

LAUNDRY SOAP, CHIP

American Soap & Washoline Co., Cohoes, N. Y.
Armour Soap Wks., 1355 W. 31st St., Chicago
Beach Soap Co., Lawrence, Mass.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Du Bois Soap Co., Cincinnati, O.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Fels & Co., Philadelphia
Harris Soap Co., Buffalo, N. Y.
Haskins Bros. Co., Omaha
Hewitt Soap Co., Dayton, Ohio
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Long Island Soap Co., Meeker Ave. & Bridgewater St., Brooklyn
Los Angeles Soap Co., Los Angeles, Calif.
Geo. E. Marsh Co., 200 Broadway, Cambridge, Mass.
Nat'l Milling & Chem. Co., Manayunk, Phila.
National Oil Products Co., Harrison, N. J.
National Soap Co., 357 South 25th St., Tacoma, Wash.
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Union Stock Yards, Chicago
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wrisley Co., 6801 W. 65th St., Chicago, Ill.
Chas. W. Young & Co., 1247 N. 26th St., Phila.

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Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Beach Soap Co., Lawrence, Mass.
Chemical Mfg. & Dist. Co., Easton, Pa.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Cudahy Packing Co., 221 N. La Salle St., Chicago
Du Bois Soap Co., Cincinnati, O.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Haskins Bros. & Co., Omaha
Hewitt Soap Co., Dayton, Ohio
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Los Angeles Soap Co., Los Angeles, Calif.
Geo. E. Marsh Co., 200 Broadway, Cambridge, Mass.
Napthole, Inc., 15 E. 26th St., N. Y.
Nat'l Milling & Chem. Co., Manayunk, Phila.
National Oil Products Co., Harrison, N. J.
National Soap Co., 357 South 25th St., Tacoma, Wash.
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Port Huron Detergent Co., Port Huron, Mich.
Procter & Gamble Co., Cincinnati
John T. Stanley Co., 642 W. 30th St., N. Y.
Stevens Soap Corp., 202 Sullivan St., Brooklyn
Swift & Co., Union Stock Yards, Chicago
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wrisley Co., 6801 W. 65th St., Chicago, Ill.
Chas. W. Young & Co., 1247 N. 26th St., Phila.

LAUNDRY SODA, see SODA

LAUNDRY SOURS (Fluoride, etc.)

Aluminum Co. of America, Gulf Bldg., Pittsburgh
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
American Fluoride Corp., 151 W. 19th St., N. Y.
Blockson Chemical Co., Joliet, Ill.
Chemical Mfg. & Dist. Co., Easton, Pa.
Diamond Alkali Co., 535 Smithfield Ave., Pittsgurgh, Pa.
General Chem. Co., 40 Rector St., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Hummel Chem. Co., 90 West St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Port Huron Detergent Co., Port Huron, Mich.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Standard Chem. Co., Columbus, O.
John T. Stanley Co., 642 W. 30th St., N. Y. C.
Henry Sundeimer, Inc., 103 Park Ave., N. Y.
Thompson-Hayward Chemical Co., Kansas City, Mo.
Victor Chemical Wks., 141 W. Jackson Blvd., Chicago
Welch Holme & Clark, Inc., 563 Greenwich St., N. Y.
Chas. W. Young & Co., 1247 N. 26th St., Phila.

LAVENDER OIL (see ESSENTIAL OILS)

LAURIC ACID (see also FATTY ACIDS)

Armour & Co., 1355 W. 31st St., Chicago
E. F. Drew & Co., Wecoline Div., Boonton, N. J
Woburn Chemical Corp., Harrison, N. J.

LAURYL ALCOHOL

E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del.
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y. C.
Michel Export Co., 95 Broad St., N. Y.

LEAD ARSENATE

Amer. Agricultural Chem. Co., 50 Church St., N. Y.
American Cyanamid & Chem. Co., 30 Rockefeller Plaza, N. Y.
California Spray-Chemical Corp., Lucas & Ortho Way, Richmond, Calif.
Chipman Chem. Co., Bound Brook, N. J.
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del.
General Chemical Co., 40 Rector St., N. Y.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Sherwin-Williams Co., Cleveland, O.

LECITHIN

American Lecithin Corp., Corona Ave., Elmhurst, L. I.
Chemical Novelties Corp., 946 W. 5th St., Cincinnati
W. A. Cleary Corp., New Brunswick, N. J.
Digestive Ferments Co., 930 Henry St., Detroit
Enco Co., 441 Lexington Ave., N. Y.
R. W. Greeff & Co., 10 Rockefeller Plaza, N. Y.
Merck & Co., Rahway, N. J.
Soya Corp. of America, 30 Rockefeller Plaza, N. Y.
A. E. Starkie, 5461 W. Division St., Chicago
Welch Holme & Clark, Inc., 563 Greenwich St., N. Y.
Wilson Labs., 4221 S. Western Blvd., Chicago

LEMON OIL (see ESSENTIAL OILS)

LEMONGRASS OIL (see ESSENTIAL OILS)

LIME (Live and Hydrated)

Aluminum Co. of America, Gulf Bldg., Pittsburgh
California Spray-Chemical Corp., Lucas & Ortho Way, Richmond, Calif.
E. I. Du Pont de Nemours, Wilmington, Del.
Hoosac Valley Lime Co., Adams, Mass.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Lehigh Lime Co., 111 W. Washington St., Chicago
National Gypsum Co., 192 Delaware Ave., Buffalo, N. Y.
Rockland-Rockport Lime Co., Rockland, Maine
William H. Scheel, Inc., 38 Franklin St., Brooklyn
U. S. Lime Prods. Corp., 85 Second St., San Francisco
Whiterock Quarries, Inc., Bellefonte, Pa.
Whittaker, Clark & Daniels, Inc., 260 W. Bway., N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.

LIME SULFUR

Allen Co., Pittstown, N. J.
California Spray-Chemical Corp., Lucas & Ortho Way, Richmond, Calif.
Chipman Chemical Co., Bound Brook, N. J.
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del.
General Chemical Co., 40 Rector St., N. Y.
Sherwin-Williams Co., Cleveland, O.
Shores Co., Cedar Rapids, Iowa
Taylor Chem. Wks., Aberdeen, N. C.

LINALOE OIL (see ESSENTIAL OILS)

LINALOOL (see AROMATIC CHEMICALS)

LINALYL ACETATE (see AROMATIC CHEMICALS)

LINERS (see BAG LINERS)

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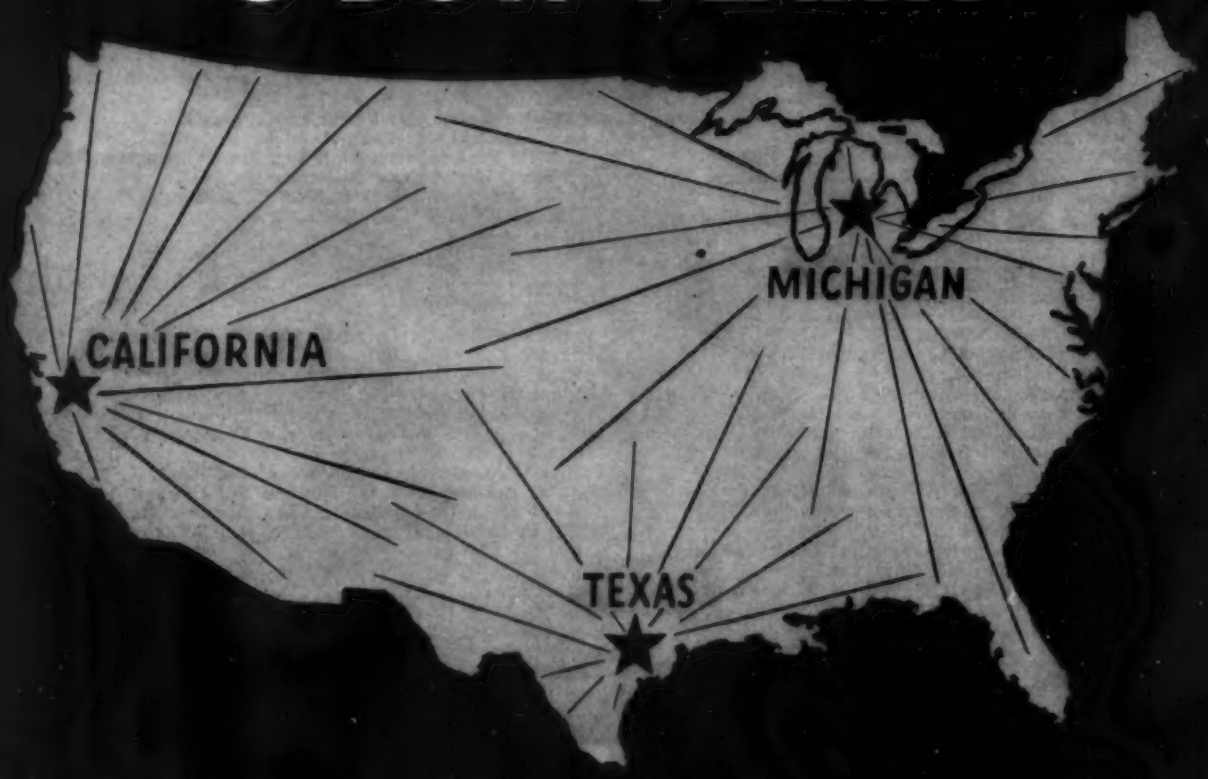

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(see also Brokers and Dealers)

Archer-Daniels-Midland Corp., Minneapolis, Minn.
Bisbee Linseed Co., Philadelphia
William O. Goodrich Co., Milwaukee, Wis.
Spencer Kellogg & Sons, Buffalo, N. Y.
Kelloggs & Miller, Amsterdam, N. Y.
Minnesota Linseed Oil Co., Minneapolis, Minn.
Pacific Vegetable Oil Corp., 62 Townsend St., San Francisco
J. H. Redding, Inc., 17 Battery Place, N. Y.
A. E. Starkie Co., 5461 W. Division St., Chicago
Welch Holme & Clark Co., 563 Greenwich St., N. Y.

LINSEED OIL SOAP (see POTASH SOAPS)

LIQUID SOAP AND BASE (see POTASH SOAP)

MACHINERY (Used) (see USED MACHINERY)

MAGNESIUM CARBONATE

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, N. Y.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Hercules Powder Co., 961 Market St., Wilmington, Del.
Innis-Speiden & Co., 117 Liberty St., N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.

MAGNESIUM OXIDE

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, N. Y.
Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours & Co., Wilmington, Del.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis-Speiden & Co., 117 Liberty St., N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.

MAGNESIUM STEARATE (see STEARATES)

MANILA GUMS

Gillespie-Rogers-Pyatt Co., 80 John St., N. Y.
O. G. Innes Corp., 533 Canal St., N. Y.
Wm. H. Scheel, Inc., 38 Franklin Street, Brooklyn
Stroock & Wittenberg Corp., 60 E. 42nd St., N. Y.

MARINE SOAPS (see SALT WATER SOAPS)

MECHANIC'S HAND PASTE (see HAND SOAP)

MEDICINAL SOAPS, CAKE

Armour Soap Wks., 1355 W. 31st St., Chicago
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Hewitt Soap Co., Dayton, O.
Los Angeles Soap Co., Los Angeles, Calif.
Newell Gutradt Co., 350 Fremont St., San Francisco, Cal.
Procter & Gamble Co., Cincinnati
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

MEDICINAL SOAPS, LIQUID (see POTASH SOAPS)

MENTHOL

(see also Essential Oils)

S. W. Bridges & Co., 82 Wall St., N. Y.
Dodge & Olcott Co., 180 Varick St., N. Y.
P. R. Dreyer, 119 W. 19th St., N. Y.
Fritzsche Bros., Inc., 76 Ninth Ave., N. Y.
Magnus, Mabee & Reynard, Inc, 16 Desbrosses St., N. Y.
A. Maschmeijer, Jr., Inc., 45 W. 16th St., N. Y.
McKesson & Robbins, Inc., 155 E. 42nd St., N. Y.
Norda Essential Oil & Chem. Co., 601 W. 26th St., N. Y.
Orbis Products Corp., 215 Pearl St., N. Y.
S. B. Penick & Co., 50 Church St., N. Y.
R. J. Prentiss & Co., 80 John St., N. Y.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Schimmel & Co., 601 W. 26th St., N. Y.
Sherka Chemical Co., 86 Orange St., Bloomfield, N. J.
Standard Synthetics, Inc., 119 W. 25th St., N. Y.
Tombarel Prods., 12 E. 22nd St., N. Y.

MERCURY BICHLORIDE (Corrosive Sublimate)

General Chemical Co., 40 Rector St., N. Y.
Heyden Chemical Corp., 50 Union Sq., N. Y.
Mallinckrodt Chemical Works, St. Louis
Merck & Co., Rahway, N. J.
New York Quinine & Chem. Wks., N. 11th & Berry Sts., Brooklyn
Chas. Pfizer & Co., 81 Maiden Lane, N. Y.
Wood Ridge Mfg. Co., Wood Ridge, N. J.

METAL POLISH (see POLISH)

METAL RECEPTACLES (Waste Baskets, Spittoons, etc., Garbage Pails & Barrels)

Justrite Mfg. Co., 2061 N. Southport Ave., Chicago
F. H. Lawson Co., Cincinnati
National Enameling & Stamping Co., Milwaukee, Wisc.
Solar Receptacle Co., Melrose Park, Ill.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Wheeling Corrugating Co., Wheeling, W. Va.,
Witt Cornice Co., 2118 Winchell Ave., Cincinnati

METALLIC SOAPS (see STEARATES)

METERS (see INSTRUMENTS)

METHANOL (Synthetic)

Carbide & Carbon Chem. Corp., 30 E. 42nd St., N. Y.
Commercial Solvents Corp., Terre Haute, Ind.
E. I. Du Pont de Nemours & Co., Wilmington, Del.

METHYL ANTHRANILATE

(see also Aromatic Chemicals)

Dow Chemical Co., Midland, Mich.
E. I. Du Pont de Nemours, Wilmington, Del.
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
Florasynth Labs., Olmstead & Starling Aves., N. Y.
A. Maschmeijer, Jr., Inc., 45 W. 16th St., N. Y.

METHYL CELLULOSE

Dow Chemical Co., Midland, Mich.
General Dyestuffs Corp., 435 Hudson St., N. Y.
Hercules Powder Co., Wilmington, Del.

METHYL SALICYLATE (Artificial Wintergreen)

(see also Aromatic Chemicals)

Dow Chemical Co., Midland, Mich.
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
Heyden Chemical Corp., 50 Union Sq., N. Y.
Merck & Co., Rahway, N. J.
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis

MILLS, SOAP POWDER (see SOAP MACHINERY & GRINDING MACHINERY)

MINERAL OIL, WHITE (see WHITE MINERAL OIL)

MINERAL SOAP STOCK (see PETROLATUM)

MIRBANE OIL (Nitrobenzine)

(see also Essential Oils)

Calco Chemical Co., Bound Brook, N. J.
E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del.
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis
National Aniline & Chemical Div., 40 Rector St., N. Y.
Naugatuck Aromatics, Inc., 254 Fourth Ave., N. Y.

MIXERS (Portable)

Alsop Engineering Corp., 100 High St., Milldale, Conn.
Consolidated Products Co., 15 Park Row, N. Y. (Used)
Eastern Engineering Co., 45 Fox St., New Haven, Conn.
Ertel Eng. Co., Kingston, N. Y.
Filter Paper Co., 57 E. 24th St., Chicago
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259—46th St., Brooklyn
Frank B. Lomax Co., 365 W. Oak St., Chicago
Mixing Equipment Co., Inc., 1067 Garson Ave., Rochester, N. Y.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago (Used)
Patterson Fdy. & Mch. Co., E. Liverpool, O.
Pfaudler Co., 89 East Ave., Rochester, N. Y.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Read Machy. Co., York, Pa.
Stein Equipment Corp., 426 Broome St., N. Y. (Used)

MIXING MACHINERY (Change Can)

Abbe Engineering Co., 50 Church St., N. Y.
Arthur Colton Co., Detroit, Mich.
Consolidated Products Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
Houchin Machy. Co., Hawthorne, N. J.
Huber Machine Co., 259—46th St., Brooklyn
Kent Machine Works, 39 Gold St., Brooklyn
Mixing Equipment Co., Inc., 1067 Garson Ave., Rochester, N. Y.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago (Used)
Patterson Foundry & Mch. Co., E. Liverpool, Ohio
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Read Machy., Co., York, Pa.
Chas. Ross & Son Co., 150 Classon Ave., Brooklyn
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
Waterville Fndry. & Machine Co., Waterville, N. Y.

MIXING MACHINERY (Dry Products)

Abbe Engineering Co., 50 Church St., N. Y.
Consolidated Products Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
B. F. Gump Co., 412 S. Clinton St., Chicago
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259—46th St., Brooklyn
Lancaster Iron Works, Lancaster, Pa.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago (Used)
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Prater Pulverizer Co., 1829 S. 55th Ave., Chicago
Read Machy. Co., York, Pa.
Robinson Mfg. Co., Muncy, Pa.
Chas Ross & Son Co., 150 Classon Ave., Brooklyn
Sprout Waldron & Co., Muncy, Pa.
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
Stephens-Adamson Mfg. Co., Aurora, Ill.
F. J. Stokes Machine Co., Philadelphia, Pa.
Struthers-Wells Corp., Warren, Pa.
Aurelio Tanzi Engineering Co., 430 Jefferson St., Bklyn.

MIXING MACHINERY (General)

Alsop Engineering Corp., 100 High St., Milldale, Conn.
Baker-Perkins Co., 250 Park Ave., N. Y.
Beach-Russ Co., 50 Church St., N. Y.
Arthur Colton Co, Detroit
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Eastern Engineering Co., 45 Fox St., New Haven
Edge Moor Iron Wks., 30 Rockefeller Plaza, N. Y.
Filter Paper Co., 57 E. 24th St., Chicago
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
B. F. Gump Co., 431 S. Clinton St., Chicago
Houchin Machinery Co., Hawthorne, N. J.
S. Howes Co., Inc., Silver Creek, N. Y.
Huber Machine Co., 259—46th St., Brooklyn
Kent Machine Co., 37 Gold St., Brooklyn
Lancaster Iron Works, Lancaster, Pa.
J. M. Lehmann Co., Lyndhurst, N. J.
Littleford Bros., 443 E Pearl St., Cincinnati
Mixing Equipment Co., 1067 Garson Ave., Rochester, N. Y.
Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago (Used)
Patterson Foundry & Mach. Co., East Liverpool, Ohio
Pfaudler Co., 89 East St., Rochester, N. Y.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Prater Pulverizer Co., 1829 S. 55th Ave., Chicago
Read Machinery Co., York, Pa.
Robinson Mfg. Co., Muncy, Pa.
Chas. Ross & Son Co., 150 Classon Ave., Brooklyn
Sowers Mfg. Co., 1296 Niagara St., Buffalo, N. Y.
Sprout Waldron & Co., Muncy, Pa.
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
Stephens-Adamson Mfg. Co., Aurora, Ill.
F. J. Stokes Mach. Co., Philadelphia, Pa.
Struthers-Wells Co., Warren, Pa.
Turbo Mixer Corp., 247 Park Ave., N. Y.
Waterville Foundry & Machine Co., Waterville, N. Y.

MONEL METAL EQUIPMENT

Eastern Engineering Co., New Haven, Conn. (Pumps)
Edge Moor Iron Wks., 30 Rockefeller Plaza, N. Y.
Houchin Machinery Co., Hawthorne, N. J.
International Nickel Co., 67 Wall St., N. Y.
Alan Porter Lee, Inc., 136 Liberty St., N. Y.
Littleford Bros., 453 E. Pearl St., Cincinnati
Pfaudler Co., 89 East St., Rochester, N. Y.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Sprout Waldron & Co., Muncy, Pa.
F. J. Stokes Machine Co., Phila.
Wurster & Sanger, Inc., 5201 Kenwood Ave., Chicago

MONTAN WAX (see WAXES)

MOP HANDLES

Algoma Mfg. Co., Green Bay, Wis.
Amer. Standard Mfg. Co., 2509 S. Green St., Chicago
Stanley H. Coffin, 12 Pearl St., Boston
Continental Car-Na-Var Corp., Brazil, Ind.
Eagle Woodenware Mfg. Co., Hamilton, O.
Economy Mop Wringer Co., 1944 W. 21st St., Chicago
Erie Mop & Wringer Co., East Rochester, N. Y.
Howard Dustless Duster Co. Boston
W. E. Kautenberg Co., Freeport, Ill.
Massasoit Mfg. Co., 72 Park Pl., N. Y.
Rubon Wood Finishing & Prods. Co., 500 W. 7th St., Kansas City, Mo.
Silver-Chamberlin Co., Clayton, N. Y.
White Mop Wringer Co., Fultonville, N. Y.

MOP WRINGERS AND PAILS

Stanley H. Coffin, 12 Pearl St., Boston
Colson Mfg. Co., Elyria, O.
Dobbins Mfg. Co., Elkhart, Ind.
Eagle Woodenware Mfg. Co., Hamilton, Ohio
Economy Mop Wringer Co., 1944 W. 21st St., Chicago
Geuder, Paesche & Frey, Milwaukee, Wis.
Illinois Duster Co., 1944 Webster Ave,. Chicago
S. C. Lawlor Co., 122 N. Aberdeen St., Chicago
Muskegon Sanitary Supply Co., Muskegon Heights, Mich.
Palmer Products, Inc., Waukesha, Wisc.
Sanitary Mfg. Co., 926 Ft. Wayne Ave., Indianapolis
Sweet Mop Co., 1913 Fremont Ave., South Pasadena, Cal.
Tarbox Lever Corp., 61 Chandler St., Buffalo
White Mop Wringer Co., Fultonville, N. Y.

MOPPING TANKS AND TRUCKS

Eagle Woodenware Mfg. Co., Hamilton, O.
Economy Mop Wringer Co., 1944 W. 21st St., Chicago
S. C. Lawlor Co., 122 N. Aberdeen St., Chicago
Palmer Products, Inc., Waukesha, Wisc.
White Mop Wringer Co., Fultonville, N. Y.

MOPS

Alabama Broom & Mattress Co., Huntsville, Ala.
Algoma Mfg. Co., Green Bay, Wis.
Amer. Standard Mfg. Co., 2509 S. Green St., Chicago
Amer. Textile Prods. Co., 5606 Euclid Ave., Cleveland
Burdett-Rose Mfg. Co., 6100 Independence Rd., Kansas City, Mo.
California Cotton Mills Co., Oakland, Calif.
Chattanooga Broom & Mop Co., Chattanooga, Tenn.
Clark Bros. Mfg. Co., 34 N. Front St., Phila.
Stanley H. Coffin, 12 Pearl St., Boston, Mass.
Continental Car-Na-Var Corp., Brazil, Ind.
Eagle Woodenware Mfg. Co., Hamilton, O.
Howard Dustless Duster Co., Boston, Mass.
Illinois Duster & Brush Co., 1944 Webster Ave., Chicago
W. E. Kautenberg Co., P. O. Box 255, Freeport, Ill.
Klenzall Mfg. Co., Atlanta, Ga.
Palmer Products, Inc., Waukesha, Wisc.
Pioneer Mfg Co., Cleveland, Ohio
Rubon Woodfinishing & Prod. Co., 500 W. 7th St., Kansas City, Mo.
Sanitary Mfg. Co., 926 Ft. Wayne Ave., Indianapolis
Schaefer-Wetcher Co., 445 W. Jefferson Ave., Detroit
Silver-Chamberlain Co., Clayton, N. J.
T. C. Smyth Mfg. Co., Union City, Ind.
Sweet Mop Co., 1913 Fremont Ave., South Pasadena, Cal.
Tate Mfg. Co., Boston, Mass.
M. J. Toohey & Co., Fall River, Mass.
Tuscaloosa Mills, Tuscaloosa, Ala.
Tu-Way Products Co., 445 W. Jefferson Ave., Detroit
Yocma Mills, Water Valley, Miss.

MOSQUITO LARVICIDES

Ampion Corp., 4-88—47th Ave., L. I. City, N. Y.
Baird & McGuire, Inc., Holbrook, Mass.
Baird & McGuire of Mo., St. Louis
Cary Mfg. Co., 4917 E. Michigan St., Indianapolis
Cenol Co., 4250 N. Pulaski Ave., Chicago
Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Chipman Chemical Co., Bound Brook, N. J.
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 247 Front St., N. Y.
Davies-Young Soap Co., Dayton, O.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
James Huggins & Son, 239 Medford St., Malden, Mass.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Koppers Co., White Tar Div., Kearny, N. J.
McCormick & Co., Inc., Baltimore, Md.
Merck & Co., Rahway, N. J.
Palmer Products, Inc., Waukesha, Wisc.
Peck's Products Co., St. Louis
Shell Oil Co., 50 W. 50th St., N Y.
Uncle Sam Chem. Co., 329 E. 29th St., N. Y.
Thompson-Hayward Chemical Co., Kansas City, Mo.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Velsicol Corp, 120 E. Pearson St., Chicago
York Chem. Co., 424 W. 18th St., N. Y.

MOTH BAGS

Clopay Co., Cincinnati
Kennedy Car Liner Co., Indianapolis
LeMontre Co., Cincinnati
Rosette Co., 200 Tillary St., Brooklyn

MOTH PROOFING COMPOUNDS

American Cyanamid & Chemicals Corp., 30 Rockefeller Plaza, N. Y.
Ampion Corp., 4-88—47th Ave., L. I. City, N. Y.
Associated Chemists, Inc., 1906 N. Halsted Ave., Chicago
Barrett Co., 40 Rector St., N. Y.
Baird & McGuire, Inc., Holbrook, Mass.
Baird & McGuire, Inc., of Mo., St. Louis
Brilco Labs., 947—61st St., Brooklyn
Cenol Co., 4250 N. Crawford Ave., Chicago
Chemical Supply Co., Plymouth Bldg., Cleveland
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Edelman Co., 6429 S. St. Lawrence Ave., Chicago
Fuld Bros., Inc., 702 S. Wolfe St., Baltimore
General Dyestuffs Corp., 435 Hudson St., N. Y.
R. W. Greeff & Co., 10 Rockefeller Plaza, N. Y.
Harrison Oil Co., 5110 N. 35th St., Milwaukee
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hooker Electrochemical Co., Niagara Falls, N. Y.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Koppers Co. (White Tar Division), Kearny, N J.
Lewis Soap & Chem. Co., 2210 San Pablo Ave., Oakland, Calif.
Maywood Pest Exterminators, Maywood, Ill.
Merck & Co., Rahway, N. J.
Midway Chemical Co., 5235 W. 65th St., Chicago
Peck's Products Co., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Phila.
Per-Mo Mothproof Co., 3729 Virginia Ave., Kansas City, Mo.
Reilly Tar & Chemical Corp., Indianapolis
Solvay Sales Corp., 40 Rector St., New York
Thompson-Hayward Chemical Co., 2915 S. W. Blvd., Kansas City, Mo.
Trojan Products & Mfg. Co., 3130 S. Wabash Ave., Chicago
J. A. Tumbler Labs., 423 Hanover St., Baltimore

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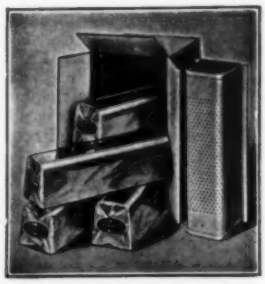

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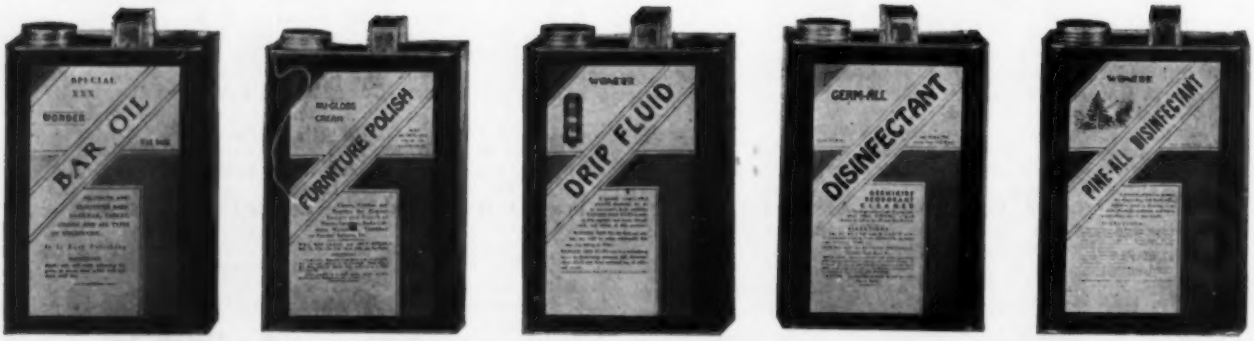

UNCLE SAM CHEMICAL CO., INC.

329 East 29th Street *Established 1915* New York 16, N. Y.

MOTH PROOFING COMPOUNDS (Contd.)

Joseph Turner Co., Ridgefield, N J.
Uncle Sam Chem. Co., 329 E. 29th St., N. Y.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Whitmire Research Corp., 339 S. Vandeventer, St. Louis

MOTH SPRAYS (see HOUSEHOLD INSECTICIDES, LIQUID)

MOTTLED SOAPS

Hewitt Soap Co., Dayton, O.
Lightfoot Schultz Co., Hoboken, N. J.
Los Angeles Soap Co., Los Angeles
National Soap Co., P. O. Box 1613, Tacoma, Wash.
Peck's Prods. Co., 5224 N. 2nd St., St. Louis
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Chicago
M. Werk Co., Cincinnati, O.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

MOUSE SEEDS (see POISONED SEEDS)

MUSKS, ARTIFICIAL (see AROMATIC CHEMICALS)

MYRISTIC ACID (see also FATTY ACIDS)

Woburn Chemical Corp., Harrison, N. J.

NAPHTHA (see SOLVENT NAPHTHA)

NAPHTHALENE

American-British Chem. Supplies, 180 Madison Ave.,
Barrett Co., 40 Rector St., N. Y.
S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh
Dominion Tar & Chem. Co., Ltd., Montreal
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
William E. Jordan & Bro., 2590 Atlantic Ave., Brooklyn
Koppers Co., (White Tar Division), Kearny, N. J.
Neville Co., Pittsburgh
Reilly Tar & Chem. Corp., Indianapolis
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Standard Naphthalene Prods. Co., S. Kearny, N. J.

NAPHTHALENE SULFONATES

E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
General Dyestuffs Corp., 435 Hudson St., N. Y.
National Aniline & Chem. Div., 40 Rector St., N. Y.
National Oil Products Co., Harrison, N. J.
Pennsylvania Refining Co., Butler, Pa.
Richard Sales Corp., Jersey City, N. J.
L. Sonneborn Sons, 88 Lexington Ave., N. Y.

NAPHTHENATES (see COPPER NAPHTHENATE, ZINC NAPHTHENATE)

NAPHTHENIC ACIDS (and Sulfonic Sludges)

Advance Solvents & Chem. Co., 245—5th Ave., N. Y.
Atlantic Refining Co., 260 Broad St., Philadelphia
General Petroleum Corp., 108 W. 2nd St., Los Angeles
Hummel Chem. Co., 90 West St., N. Y.
Nuodex Prods. Co., Elizabeth, N. J.
Pennsylvania Refining Co., Butler, N. J.
Petroleum By-Products Co., 15 Whitehall St., N. Y.
Petroleum Specialties, Inc., 400 Madison Ave., N. Y.
Shell Petroleum Corp., Shell Bldg., St. Louis
Sherwood Refining Co., Englewood, N. J.
L. Sonneborn Sons, 88 Lexington Ave., N. Y.

NICKEL-CLAD EQUIPMENT (see also SOAP MACHINERY)

Edge Moor Iron Wks., 30 Rockefeller Plaza, N. Y.
Houchin Machinery Co., Hawthorne, N. J.
International Nickel Co., 67 Wall St., N. Y.
Alan Porter Lee, Inc., 136 Liberty St., N. Y.
Littleford Bros., 453 E. Pearl St., Cincinnati
Lukens Steel Corp., Coatesville, Pa.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
F. J. Stokes Machine Co., Philadelphia
Wurster & Sanger, Inc., 5201 S. Kenwood Ave., Chicago

NICOTINE COMPOUNDS

California Spray-Chemical Corp., Lucas & Ortho Way, Richmond, Calif
E. I. du Pont de Nemours, Wilmington, Del.
General Chemical Co., 40 Rector St., N. Y.
Hood River Spray Co., Hood River, Ore.
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Sanocide Spray Co., Fennville, Mich.
Tobacco By-Products & Chem. Corp., Louisville

NITRE CAKE (Sodium Acid Sulfate)

Amer. Agricultural Chem. Co., 50 Church St., N. Y.
Amer. Cyanamid & Chem. Co., 30 Rockefeller Plaza, N. Y.
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
General Chemical Co., 40 Rector St., N. Y.
Chas. Lennig & Co., 222 W. Washington Sq., Philadelphia
Monsanto Chemical Co., 1724 S. 2nd St., St. Louis
Penna Salt Mfg. Co., Philadelphia
E. M. Sergeant Pulp & Chem., 350 Fifth Ave., N. Y.

NITROPARAFFINS

Commercial Solvents Corp., Terre Haute, Ind.

NON-SOAP DETERGENTS (see Detergents, Synthetic)

NOVELTY SOAPS

Armour & Co., 1355 W. 31st St., Chicago
Illustrated Soap Co., 151 W. 25th St., N. Y.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Peck's Prods. Co., St. Louis,
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Unique Soaps, P. O. Box No. 61, Covington, Ky.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

ODORLESS KEROSENE (see PETROLEUM BASE, DEODORIZED)

OIL HYDROGENATION PLANTS

William Garrigue Co., 9 S. Clinton St., Chicago
Alan Porter Lee, 136 Liberty St., N. Y.
Robinson, Butler, Hemingway & Co., Bound Brook, N. J.
Struthers Wells Titusville Corp., Warren, Pa.
Wurster & Sanger, Inc., 5201 S. Kenwood Ave., Chicago

OIL MILL EQUIPMENT

V. D. Anderson Co., 1935 W. 96th St., Cleveland
Bauer Bros. Co., Springfield, O.
Buckeye Iron & Brass Works, Dayton, O.
French Oil Mill Mach. Co., Piqua, O.
William Garrigue Co., 9 S. Clinton St., Chicago
Alan Porter Lee, Inc., 136 Liberty St., N. Y.
Robinson, Butler, Hemingway Co., Bound Brook, N. J.
Ernest Scott & Co., Fall River, Mass.
Sprout Waldron & Co., Muncy, Pa.
Struthers-Wells Co., Warren, Pa.
Wurster & Sanger, Inc., 5201 S. Kenwood Ave., Chicago

OIL SOAP (see POTASH SOAPS)

OLEIC ACID (see RED OIL)

OLIVE OIL (Commercial)

(see also Brokers and Dealers)

Irving R. Boody & Co., 120 Wall St., N. Y.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Eastern Industries, Inc., Ridgefield, N. J.
W. R. Grace & Co., 7 Hanover Sq. N. Y.
Otto A. C. Hagen Corp., Public Ledger Bldg., Phila.
J. H. Redding Co., 17 Battery Pl., N. Y.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
E. M. Sergeant Pulp & Chem. Co., 350 Fifth Ave., N. Y.
Smith-Weihman Co., 15 Moore St., N. Y.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

OLIVE OIL FOOTS

(see also Brokers and Dealers)

T. G. Cooper & Co., 47 N. 2nd St., Philadelphia
Eastern Industries, Inc., Ridgefield, N. J.
Otto A. C. Hagen Corp., Public Ledger Bldg., Phila.
J. H. Redding Co., 17 Battery Pl., N. Y.
E. M. Sergeant Pulp & Chem. Co., 350 Fifth Ave., N. Y.
Smith-Weihman Co., 15 Moore St., N. Y.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

OLIVE OIL SOAPS (see CASTILE SOAPS, TEXTILE SOAPS)

ORANGE OIL (see ESSENTIAL OILS)

ORTHODICHLORBENZENE (see listings under PARADICHLORBENZENE)

OXALIC ACID

(see also Dealers)

Amer. Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
E. I du Pont de Nemours & Co., Inc., Wilmington, Del.
Faesy & Besthoff, Inc., 22 E. 40th St., N. Y.
General Chemical Co., 40 Rector St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mallinckrodt Chemical Wks., St. Louis, Mo.
Merck & Co., Rahway, N. J.
S. B. Penick & Co., 50 Church St., N. Y.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
E. M. Sergeant Pulp & Chem. Co., 350 Fifth Ave., N. Y.
Tamms Silica Co., 228 N. La Salle St., Chicago
Jos. Turner & Co., Ridgefield, N. J.
Victor Chemical Works, 141 W. Jackson Blvd., Chicago

PACKAGING MACHINERY (see CARTONING MACHY., FILLING MACHY., WEIGHING EQUIP., WRAPPING MACHY.)

PAILS (Fibre) (see BARRELS, FIBRE)

PAILS (Steel)

American Can Co., 230 Park Ave., N. Y.
Bennett Mfg. Co., 14600 Princeton Ave., Chicago
Cans, Inc., 3217 W. 47th Pl., Chicago
Central Can Co., 2415 W. 19th St., Chicago
Fein's Tin Can Co., Bush Terminal, Brooklyn
Gueder, Paeschke & Frey Co., Milwaukee
Inland Steel Container Co., 6532 S. Menard Ave., Chicago
National Can Co., 110 E. 42nd St., N. Y.
National Steel Barrel Co., 3860 E. 91st St., Cleveland
Pittsburgh Can Co., Pittsburgh, Pa.
Pressed Steel Tank Co., 5717 Greenfield Ave., Milwaukee
Rheem Mfg. Co., 570 Lexington Ave., N. Y.
F. C. Thornton Co., 6712 Union Ave., Cleveland
John Trageser Steam Copper Works, Maspeth, L. I.
Vulcan Stamping & Mfg. Co., 4036 W. Lake St., Chicago
Wheeling Corrugating Co., Wheeling, W. Va.

PAILS (Wooden)

Beaver Mills, Keene, N. H.
Eagle Woodenware Mfg. Co., Hamilton, O.
Gambrinus Cooperage Works, Louisville
Impervious Package Co., Keene, N. H.
Menasha Woodenware Co., Menasha, Wis.
Richmond Cedar Works, Richmond, Va.

PALM KERNEL OIL

(see also Brokers and Dealers)

Balfour Guthrie & Co., 67 Wall St., N. Y.
Irving R. Boody & Co., 120 Wall St., N. Y.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Pacific Vegetable Oil Corp., 62 Townsend St., San Francisco, Calif.
Spencer Kellogg & Sons, Buffalo, N. Y.
J. H. Redding Co., 17 Battery Pl., N. Y.
Smith-Weihman Co., 15 Moore St., N. Y.
Zimmerman Alderson Carr Co., 25 Broadway, N. Y.

PALM OIL

(see also Brokers and Dealers)

Balfour Guthrie & Co., 67 Wall St., N. Y.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
E. F. Drew & Co., Wecoline Div., Boonton, N. J.
Eastern Industries, Ridgefield, N J.
Otto A. C. Hagen Corp., Public Ledger Bldg., Phila.
Pacific Vegetable Oil Corp., 62 Townsend St., San Francisco
J. H. Redding Co., 17 Battery Pl., N. Y.
Smith-Weihman Co., 15 Moore St., N. Y
Stein, Hall & Co., 285 Madison Ave., N. Y. (Sumatra)
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.
Zimmerman Alderson Carr Co., 25 Broadway, N. Y.

PALM OIL FATTY ACIDS (see FATTY ACIDS)

PAPER CANS (see CANS)

PAPER (Corrugated) (see BOXES, CORRUGATED)

PAPER CUPS

F. N. Burt Co., Batavia, N. Y.
Individual Drinking Cup Co., Easton, Pa.
Sutherland Paper Co., Kalamazoo, Mich.

PAPER (Fancy Wrapping)

Aluminum Co of America, Gulf Bldg., Pittsburgh
Beekman Paper & Card Co., 137 Varick St., N. Y.
A. M. Collins Mfg. 1518 Walnut St., Phila.
Louis Dejonge & Co., 155—6th Ave., N. Y.
C. J. Fox Co., 236 Abron St., Providence, R. I.
Fox Paper Co., Lockland, Cincinnati, O.
Hampden Glazed Peper & Card Co., Holyoke, Mass.
Henderson Lithographing Co., Cincinnati
Keller-Dorian Paper Co., 516 W. 34th St., N. Y.
New England Card & Paper Co., Springfield, Mass
Pictorial Package Co., Aurora, Ill.
Marquette Lithograph Co., 730 N. Franklin St., Chicago
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Potomac Lithograph Mfg. Co., Washington, D. C.
Richardson Co., Lockland, O.
Geo. Schmitt & Co., 253 Maujer St., Brooklyn
Louis Schulman Co., 465 Broome St., N. Y.
Strobridge Lithographing Co., Cincinnati
Sylvania Industrial Corp., 122 E. 42nd St., N. Y.
Tamm & Co., 61 E. 11th St., N. Y.
Transcello Paper Co., Milwaukee, Wisc.
U. S. Printing & Lithographing Co., Cincinnati, O.
Whiting-Paterson Co., Inc., 320—13th St., Philadelphia
Chas. W. Williams & Co., Inc., 309 Lafayette St., N. Y.

PAPER TOILET SEAT COVERS

Morton Mfg. Co., 5105 W. Lake St., Chicago
National Towel Bendon Ltd, 12 Stewart St., San Francisco
Sani-Gard Cover Co., 411 W. 5th St., Los Angeles

PAPER TOWELS and TISSUES

Brown Co., Portland, Me.
Hoberg Paper & Fibre Co., Green Bay, Wisc.
Scott Paper Co., Chester, Pa.
Straubel Paper Co., Green Bay, Wisc.
Towlsaver, Inc., 2816 E. 11th St., Los Angeles
U. S. Envelope Co., Fulton, N. Y.
U. S. Envelope Co., Lititz Pa.
Victoria Paper Mills Co., Fulton, N. Y.

PARA BLOCKS (see DEODORIZING BLOCKS)

PARADICHLORBENZENE

Delta Chemical Mfg. Co., 2101 Washington Blvd., Baltimore
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Hooker Electrochemical Co., Niagara Falls, N. Y.
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Phillipp Bros., 70 Pine St., N. Y.
Rid-O-Moth Corp., South Kearny, N. J.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Solvay Sales Corp., 40 Rector St., N. Y.

PARAFFIN

Atlantic Refining Co., 260 S. Broad St., Philadelphia
Borne-Scrymser Co., 17 Battery Pl., N. Y.
E. A. Bromund Co., 258 Broadway, N. Y.
Cornelius Products Co., 432 4th Ave., N. Y.
Distributing & Trading Co., 444 Madison Ave., N. Y.
A. C. Drury & Co., 219 East North Water St., Chicago
Gulf Refining Co., Pittsburgh
Innis, Speiden & Co., 117 Liberty St, N. Y.
Lenape Trading Co., 233 Broadway, N. Y.
George H. Lincks, 155 John St., N. Y.
Oil States Petroleum Co., 233 Broadway, N. Y.
Pennsylvania Refining Co., Butler Pa.
Petroleum Specialties, Inc., 400 Madison Ave., N. Y.
Sherwood Refining Co., Englewood, N. J.
Sinclair Refining Co., 630—5th Ave., N. Y.
Smith & Nichols, 121 Maiden Lane, N. Y.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
Standard Oil Co., (N. J.), 26 Broadway, N. Y.
Standard Oil Co.(Ohio), Midland Bldg., Cleveland
F. W. Steadman Co., 59 Pearl St., N. Y.
Strohmeyer & Arpe Co., 139 Franklin St., N. Y.
Texas Co., 135 E. 42nd St., N. Y.

PARAFFIN OILS

Atlantic Refining Co., 260 S. Broad St., Philadelphia
Deep Rock Oil Corp., 155 N. Clark St., Chicago
Gulf Refining Co., Pittsburgh
Pennsylvania Refining Co., Butler, Pa.
Petroleum Specialties, Inc., 400 Madison Ave., N. Y.
Chas. L. Read & Co., 120 Greenwich St., N. Y.
Sherwood Refining Co., Englewood, N. J.
Sinclair Refining Co., 630—5th Ave., N. Y.
Shell Petroleum Corp., Shell Bldg., St. Louis
Skelly Oil Co., Skelly Bldg., Kansas City, Mo.
L. Sonneborn Sons, Inc., 88 Lexington Ave., N. Y.
Standard Oil Co. (Calif), 225 Bush St., San Francisco
Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago
Standard Oil Co. (Ohio), Midland Bldg., Cleveland

PARAFORMALDEHYDE

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
E. I du Pont de Nemours & Co., Inc., Wilmington, Del.
Heyden Chemical Co., 50 Union Sq., N. Y.
Mallinckrodt Chem. Wks., St. Louis
Merck & Co., Rahway, N. J.
Sherka Chemical Co., 86 Orange St., Bloomfield, N. J.

PARIS GREEN

Ansbacher-Siegle Corp., Rosebank, S. I
Chipman Chemical Co., Bound Brook, N. J.
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours Co., Wilmington, Del.
General Chem. Co., 40 Rector St., N. Y.
Reichhold Chemicals, Inc., 105 Bedford Ave., Brooklyn
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Sherwin-Williams Co., Cleveland

PASTES (see ADHESIVES)

PATCHOULI OIL (see ESSENTIAL OILS)

PEACH KERNEL OIL (see ESSENTIAL OILS)

PEANUT OIL

(see also Brokers and Dealers)

Irving R. Boody Co., 120 Wall St., N. Y.
Darling & Co., 4201 S. Ashland Ave., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
Otto A. C. Hagen Corp., Public Ledger Bldg., Phila.
Spencer Kellogg & Sons, Buffalo, N. Y.
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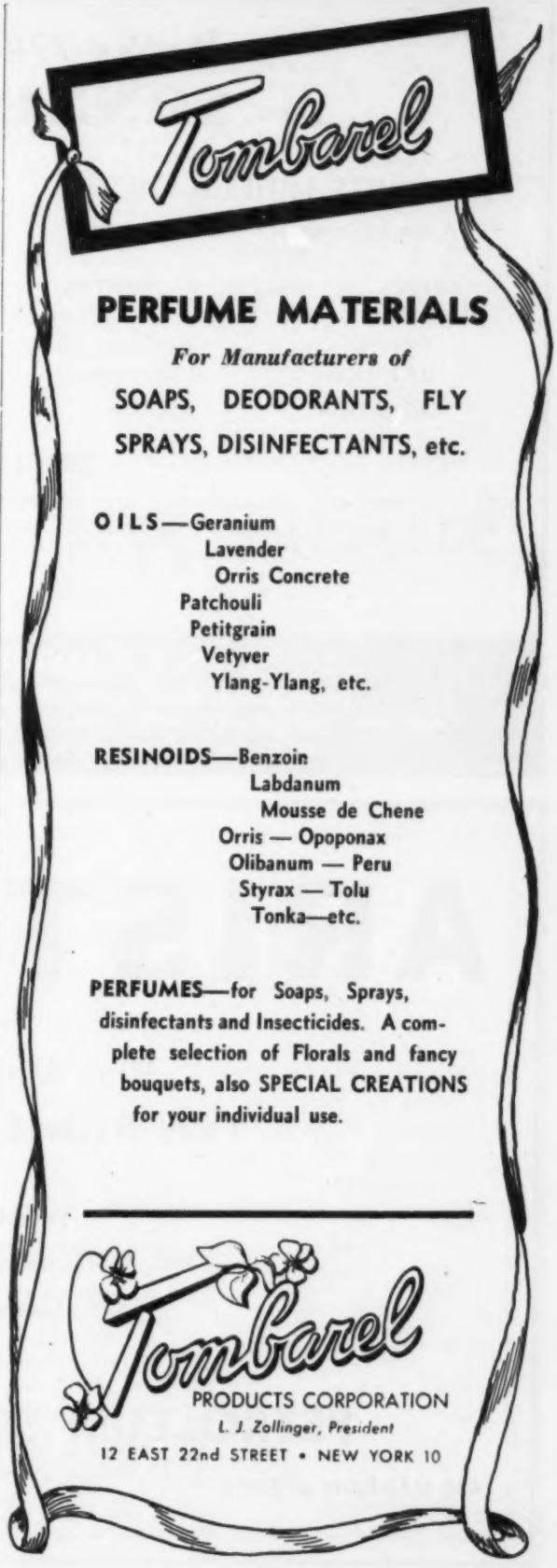

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Cudahy Packing Co., 221 N. La Salle St., Chicago
Davies Young Soap Co., Dayton, Ohio
Eagle Soap Corp., Huntington, Ind.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
A. C. Fergusson Co., Drexel Bldg., Phila.
Fuld Bros., 702 S. Wolfe St., Baltimore
Genseke Bros., W. 48th Pl. & Whipple St., Chicago, Ill.
James Good, Inc., 2116 Susquehanna Ave., Phila.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Harley Soap Co., Pierce & Orthodox Sts., Philadelphia
Hercules Powder Co., Wilmington
Higley Chemical Co., Dubuque. Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, Ohio
Hysan Products Co., 58 E. Cullerton St., Chicago
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
Kranich Soap Co., 54 Richards St., Brooklyn
Laurel Soap Mfg. Co., Tioga & Almond Sts., Philadelphia
Long Island Soap Co., Meeker Ave. & Bridgewater St., Brooklyn
Los Angeles Soap Co., Los Angeles, Calif.
Masury-Young Co., 76 Roland St., Boston
Midland Labs., Dubuque, Iowa
National Oil Products Co., Harrison, N. J.
National Soap Co., 357 South 25th St., Tacoma, Wash.
North Coast Chem. & Soap Wks., Seattle, Wash.
Palmer Products, Inc., Waukesha, Wisc.

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The new organic insecticide compound for crawling insects like roaches, bed bugs, ants and silverfish.

It acts like a combination of Pyrethrum and Sodium Fluoride—but with these *added* features:

1. **It also kills insect eggs.**
2. **It has long residual action.**
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4. **It costs less than Pyrethrum Powder.**

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AVAILABLE *for* POST-WAR PRODUCTS

PYRIN—contains the combined effectiveness of duPont's IN930 and POWCO Brand Basic Pyrethrum Extract. This extra killing power saves you money because one gallon of Double Strength PYRIN plus 39 gallons of diluent makes 40 gallons of AA spray; whereas one gallon of No. 40 Pyrethrum Concentrate (4 grams pyrethrins per 100 c.c., Seil method) with 25-2/3 gallons of diluent makes only 26-2/3 gallons of AA spray. Thus you get a bonus of 13-1/3 gallons of extra AA spray with each gallon of Double Strength PYRIN. Furthermore, a gallon of PYRIN is also lower in cost than a gallon of Straight Pyrethrum Extract . . . an *added extra* saving for you.

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PYRETHRUM POWDERS—Finer milling to give you more particles per pound . . . greater spread with higher kill.

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Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Germicide Co., Rochester, N. Y.
Royal Soap & Chem. Co., 511 S. Central Ave., Los Angeles
Rubon Woodfinishing & Prods. Co., 500 W. 7th St., Kansas City, Mo.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Schaeffer Bros. & Powell Mfg. Co., 102 Barton St., St. Louis, Mo.
Skotch Products Corp., 1220 W. 6th St., Cleveland
Solshine Mfg. Co., 44 Brookline St., Cambridge, Mass.
Standard Oil Co. (Ohio), Midland Bldg., Cleveland
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Tesco Chem Co., P. O. Box 4748, Atlanta
Thompson-Hayward Chemical Co., Kansas City, Mo.
Tremco Mfg. Co., 393 East 131st St., Cleveland
Trojan Products & Mfg. Co., 3130 S. Wabash Ave., Chicago
J. A. Tumbler Labs., 423 Hanover St., Baltimore
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Western Chem. & Mfg. Co., 4032 S. Wentworth Ave., Chicago
Chas. W. Young & Co., 1247 N. 26th St., Philadelphia

POTASSIUM CARBONATE

American Cyanamid & Chemicals Corp., 30 Rockefeller Plaza, N. Y.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
E. I. du Pont de Nemours & Co., Wilmington, Del.
Industrial Chem. Sales Div., West Va. Pulp & Paper Co., 230 Park Ave., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Harshaw Chem. Co., Cleveland
Niagara Alkali Co., 60 E. 42nd St., N. Y.
E. M. Sergeant Pulp & Chem. Co., 350 5th Ave., N. Y.
Solvay Sales Corp., 40 Rector St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

POTASSIUM PERSULFATE

American Cyanamid & Chemicals Corp., 30 Rockefeller Plaza, N. Y.
Buffalo Elec. Chem. Co., River Rd., Buffalo
E. I. du Pont de Nemours & Co., Wilmington, Del.
E. M. Sergeant Pulp & Chemical Co., 350 5th Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.

POTASSIUM SILICATE

E. I. du Pont de Nemours & Co., Wilmington, Del.
Philadelphia Quartz Co., 125 S. 3rd St., Philadelphia

POWDER GUNS (see BELLOWS)

POWDERED SOAP (see SOAP, POWDERED) Do not confuse with SOAP POWDERS

PREMIUMS

Anchor Hocking Glass Corp., Lancaster, O. (glassware)
Goody Mfg. Co., 15 E. 22nd St., N. Y. (novelties)
Hazel-Atlas Co., Wheeling, W. Va. (glassware)
Holgate Co., Kane, Pa. (woodenware toys)
Keystone Processed Prods. Co., 683 Broadway, N. Y.

PRESSES (Automatic Soap)

Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
Houchin Machinery Co., Hawthorne, N. J.
R. A. Jones & Co., Cincinnati, O.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
Stein Equipment Corp., 426 Broome St., N. Y. (Used)

PRESSES (Foot and Hand Lever for Soap and Para Cakes)

Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259 46th St., Brooklyn
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
F. J. Stokes Mach. Co., Philadelphia, Pa.

PRIVATE FORMULAS (see under individual products)

PUMICE STONE

Chas. B. Chrystal Co., 16 Hudson St., N. Y.
Pumice Corp. of America, Grants, N. M.
Wm. P. Rogers, 44 Woodman St., Lynn, Mass.
Whittaker, Clark & Daniels, 260 W. Bway., N. Y.

PUMPS

Aldrich Pump Co., 1 Pine St., Allentown, Pa.
Alsop Engineering Corp., 100 High St., Middale, Conn.
American Steam Pump Co., Battle Creek, Mich.
Beach-Russ Co., 50 Church St., N. Y.
Blackmer Pump Co., Grand Rapids, Mich.
S. F. Bowser & Co., Ft. Wayne, Ind.
Buffalo Forge Co., 490 Broadway, Buffalo, N. Y.
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
M. T. Davidson Co., 154 Nassau St., N. Y.
Eastern Engineering Co., 45 Fox St., New Haven, Conn.
Filter Paper Co., 57 E. 24th St., Chicago
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
Foster Pumps, Inc., 51 Washington St., Brooklyn, N. Y.
Goulds Pumps, Inc., Seneca Falls N. Y.
Joshua Hendy Iron Wks., Pomona, Calif.
Houchin Machinery Co., Hawthorne, N. J.
Ingersoll-Rand Co., 11 Broadway, N. Y.
Karl Kiefer Machine Co., 919 Martin St., Cincinnati
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Lobee Pump & Machine Co., Buffalo, N. Y.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
P. H. & F. M. Roots Co., Connersville, Ind.
Scientific Filter Co., 12 Franklin Square, N. Y.
T. Shriver & Co., Harrison, N. J.
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
F. J. Stokes Machine Co., Philadelphia, Pa.
Taber Pump Co., 278 Elm St., Buffalo, N. Y.
Viking Pump Co., Cedar Falls, Iowa
Worthington Pump & Machinery Co., 2 Park Ave., N. Y.

PYRETHRUM FLOWERS AND POWDER

Allaire Woodward & Co., Peoria, Ill.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Cal.
Derris, Inc., 79 Wall St., N. Y.
Dodge & Olcott Co., 180 Varick St., N. Y.
Hammond Paint & Chemical Co., Beacon, N. Y.
J. L. Hopkins & Co., 220 Broadway, N. Y.
McCormick & Co., Baltimore, Md.
McLaughlin, Gormley King Co., 1715 Fifth St., S. E., Minneapolis, Minn.

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PYREFUME SUPER 20 the "perfected Pyrethrum Extract"—guaranteed in Pyrethrins content. Chemically and physiologically tested for household and agricultural sprays. Proved effective against flies, mosquitoes, roaches, bed bugs, silver-fish and other hardy pests.

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(5% Rotenone) in pine oil or acetone for agricultural and horticultural sprays.

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(25-40% Rotenone) for general manufacturing work.

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(4% or 5% Rotenone) for manufacture of agricultural dusts.

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Physiologically tested 500-600 mg/kg standard—for efficient rat control. Avoid use of customary poisons dangerous to man.

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Allaire Woodward & Co., Peoria, Ill.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Cal.
Chemical Sales Corp., Pittsburgh 19
Dodge & Olcott Co., 180 Varick St., N. Y.
Hammond Paint & Chemical Co., Beacon, N. Y.
J. L. Hopkins & Co., 220 Broadway, N. Y.
McCormick & Co., Baltimore
McLaughlin Gormley King Co., 1715 Fifth St., S. E., Minneapolis
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John Powell & Co., 114 E. 32nd St., N. Y.
R. J. Prentiss & Co., 80 John St., N. Y.

PYROPHYLLITE

Chas. B. Chrystal Co., 16 Hudson St., N. Y.
Dicalite Co., 120 Wall St., N. Y.
Tamms Silica Co., 229 N. LaSalle St., Chicago
R. T. Vanderbilt Co., 230 Park Ave., N. Y.
Whittaker, Clark & Daniels, 260 W. Bdway., N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.

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Balfour, Guthrie & Co., 67 Wall St., N. Y.
Irving R. Boody & Co., 120 Wall St., N. Y.
T. G. Cooper & Co., 47 N. 2nd St., Philadelphia
Otto A. C. Hagen Corp., Public Ledger Bldg., Phila.
Pacific Vegetable Oil Corp., 62 Townsend St., San Francisco
J. H. Redding, Inc., 17 Battery Pl., N. Y.
E. M. Sergeant Pulp & Chemical Co., Empire State Bldg., N. Y.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
Smith-Weihman Co., 15 Moore St., N. Y.
A. E. Starkie, 5461 W. Division St., Chicago
Arthur C. Trask Co., 4103 S. La Salle St., Chicago
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

RAT EXTERMINATING PRODUCTS

American Fluoride Corp., 151 W. 19th St., N. Y.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Associated Chemists, Inc., 1906 N. Halsted Ave., Chicago
Cenol Co., 4250 N. Pulaski Ave., Chicago
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Eagle Soap Corp., Huntington, Ind.
Exterminating Materials Co., 555 W. 22nd St., N. Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
Goulard & Olena, Inc., 140 Liberty St., N. Y.
Foote Mineral Co., 1609 Summer St., Philadelphia
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Hysan Products Co., 58 E. Cullerton St., Chicago
Innis, Speiden & Co., 117 Liberty St., N. Y.
Lethelin Products Co., Mt. Vernon, N. Y.
Lewis Soap & Chem. Co., 2210 San Pablo Ave., Oakland, Calif.
Maywood Pest Exterminators, Maywood, Ill.
John Opitz, Inc., 50-14 39th St., Long Island City, N. Y.
Pfaltz & Bauer, Inc., 350 Fifth Ave., N. Y.
Ratin Laboratories, Inc., 112 Broad St., N. Y.
Sennewald Drug Co., 2723 Chouteau Ave., St. Louis
Shores Co., Cedar Rapids, Iowa
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	Titre	F.F.A. min.	Iodine	Color	Unsap.
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Redistilled Corn Oil F.A.	26-28	100	100-110	2 NPA max.	.....
Distilled Cotton Oil F.A.	32-34	98	90-100	3½ NPA max.	.....
Redistilled Cotton Oil F.A.	34-36	100	90-100	2 NPA max.	.....
Distilled Coconut F.A.	18-22	128	9-15	2 NPA max.	.....
Distilled Veg. F.A. (VRO)	20-24	110	45-55	3 NPA max.	.....
Distilled Animal F.A.	38-42	102	50-60	2 NPA max.	.....
Distilled Roleic F.A.	32-36	100	44-50	3½ NPA max.	.....

The Purest Form of

STEARIC ACID

Specifications

	Titre	Iodine	F.F.A.	Color. Reading Yellow	Red
Single Pressed Stearic Acid Bead form Stearic Acid Cake form	52.2 to 53.0	10 to 15	103 to 104	10 max.	1.5 max.
Hi Test Single Pressed S. A. Cake or Beads	53.0 53.4	9 max.	103 104	6 max.	1.0 max.
Standard Double Pressed Cake or Beads	53.4 53.9	7 to 9	103 104	4 max.	0.8 to 1.0
Super Double Pressed Cake or Beads	53.9 54.3	5 to 7	103 104	3 max.	0.8 max.
Special Double Pressed Cake for Candle Mfg.	53.9 54.3	5 7	103 105	3 max.	0.8 max.
				Ash 0.004 max.	
Triple Pressed (Regular) Cake or Beads	54.5 53.8	4 max.	104 105	2 max.	0.5 max.
Triple Pressed (Super) *Cake or Beads (Crystal brand)	54.9 55.3	2 max.	104 105	1 max.	0.2 max.

*Large crystals.
Special quality stearic acid produced for buffing trade.

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(Saponified and Distilled)

Specifications

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Distilled R. (Extra Quality)	8-10/10/12	90	97-98	2½-3½ NPA	3%
White Oleine (Redist. R/O)	10-12	90	99-100	1½ max. NPA	2%
Sap. Red Oil (Reg. Grade)	10-12	88-90	92-95	5-7 max. NPA	3% max.
Sap. Red Oil (Hi Titre)	34-38	.....	100-102	7 or darker	.....

(Also Dist. as above except color lighter)
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Sur-Rid Prods. Co., 455 Paul Brown Bldg., St. Louis
Trojan Prods. & Mfg. Co., 3130 S. Wabash Ave., Chicago
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Uncle Sam Chem. Co., 329 E. 29th St., N. Y.
U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago
Victory Chem. Co., 148 Fairmount Ave., Philadelphia
York Chemical Co., 424 W. 18th St., N. Y.

RAT POISONS (see SQUILLS, THALLIUM SULFATE, etc.)

RED OIL (Oleic Acid)

(see also Brokers and Dealers)

American British Chem. Supplies, Inc., 180 Madison Ave., N. Y.
American Cyanamid & Chemicals Corp., 30 Rockefeller Plaza, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Celina Stearic Acid Co., Celina, Ohio
Century Stearic Acid Candle Works, 41 E. 42nd St., N. Y.
Darling & Co., 4201 S. Ashland Ave., Chicago
E. F. Drew & Co., Wecoline Div., Boonton, N. J.
Eastern Industries, Ridgefield, N. J.
Emery Industries, Inc., 4300 Carew Tower, Cincinnati
A. Gross & Co., 295 Madison Ave., N. Y.
Otto A. C. Hagen, Public Ledger Bldg., Philadelphia
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Harkness & Cowing, Ivorydale, Cincinnati
Procter & Gamble Co., Cincinnati
E. M. Sergeant Pulp & Chem. Co., 350 5th Ave., N. Y.
Theobald Industries, Kearny, N. J.
Arthur C. Trask Co., 4108 S. La Salle St., Chicago
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.
M. Werk Co., St. Bernard, Cincinnati
Wilson-Martin Co., Snyder Ave. & Swanson St., Philadelphia

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First Machy. Corp., 819 E. 9th St., N. Y. (Used)
William Garrigue & Co., 9 S. Clinton St., Chicago
Alan Porter Lee, Inc., 136 Liberty St., N. Y.
Lancaster Iron Works, 564 S. Prince St., Lancaster, Pa.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
Ernest Scott & Co., Fall River, Mass.
Struthers-Wells Co., Warren, Pa.
Walter E. Simmons Co., Boston
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
Struthers-Wells Co., Warren, Pa.
Swenson Evaporator Co., Harvey, Ill.
Wurster & Sanger, Inc., 5201 S. Kenwood Ave., Chicago

REFRIGERATING EQUIPMENT

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York Ice Machine Co., York, Pa.

REMELTERS

Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259 46th St., Brooklyn
Lancaster Iron Works, 564 S. Prince St., Lancaster, Pa.
Patterson Foundry & Mach. Co., East Liverpool, O.
Struthers-Wells Co., Warren, Pa.
Wurster & Sanger, Inc., 5201 Kenwood Ave., Chicago

RESINS, SYNTHETIC

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Bakelite Corp., 300 Madison Ave., N. Y.
General Electric Co., Bridgeport, Conn.
Durez Plastics, Inc., North Tonawanda, N. Y.
Paramet Chem. Corp., 44th Ave. & 10th St., L. I. City
Reichhold Chemicals, Inc., Detroit
Resinous Prods. & Chem. Corp., 222 W. Washington Sq., Philadelphia
Stroock & Wittenberg Corp., Lincoln Bldg., N. Y.

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E. W. College, General Sales Agent, P. O. Box 389, Jacksonville, Fla.
Continental Turp. & Rosin Corp., Laurel, Miss.
Crosby Naval Stores, Picayune, Miss.
Dixie Pine Prods. Co., Hattiesburg, Miss. (wood)
Georgia Rosin Prods. Co., Brunswick, Ga.
Glidden Co., Naval Stores Div., P. O. Box 380, Jacksonville, Fla.
Hercules Powder Co., Wilmington, Del. (wood)
Industrial Chem. Sales Div., West Va., Pulp & Paper Co., 230 Park Ave., N. Y.
Newport Industries, Inc., 230 Park Ave., N. Y.
Phoenix Naval Stores Co., Gulfport, Miss. (wood)
Chas. L. Read & Co., 120 Greenwich St., N. Y.
Southern Pine Chem. Co., Box 389, Jacksonville
Taylor, Lowenstein & Co., Mobile, Ala.

ROSINS SOAPS (Saponified Rosins)

Chemical Mfg. & Dist. Co., Easton, Pa.
James Good, Inc., 2116 E. Susquehanna Ave., Philadelphia
Haskins Bros. & Co., Omaha
Nat'l Oil Products Co., Harrison, N. J.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Chas. W. Young & Co., 1247 N. 26th St., Philadelphia

ROTENONE PRODUCTS (see also CUBE)

Agricide Laboratories, 1717 Taylor Ave., Racine, Wis.
California Spray-Chemical Corp., Lucas & Ortho Way, Richmond, Calif.

ROTENONE PRODUCTS (Contd.)

Chipman Chem. Co., Bound Brook, N. J.
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Dodge & Olcott Co., 180 Varick St., N. Y.
Hammond Paint & Chem. Co., Beacon, N. Y.
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Lenape Trading Co., 233 Broadway, N. Y.
McCormick & Co., Baltimore, Md.
Orbis Products Corp., 215 Pearl St., N. Y.
S. B. Penick & Co., 50 Church St., N. Y.
John Powell & Co., 114 E. 32nd St., N. Y.
R. J. Prentiss & Co., 80 John St., N. Y.
Frank B. Ross Co., 507—8th St., Hoboken, N. J.
U. S. Indus. Chemicals, Inc., 60 E. 42nd St., N. Y.
Whitmire Research Corp., St. Louis

ROTTEN STONE (see ABRASIVES and FILLERS)

RUBBER STOPPERS (see LABORATORY APPARATUS)

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Ampion Corp., 4-88—47th Ave., L. I. City, N. Y.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Candy & Co., 2515 W. 35th St., Chicago
Chemical Mfg. & Distrib. Co., Easton, Pa.
Chemical Supply Co., Plymouth Bldg., Cleveland
Churchill Mfg. Co., Galesburg, Ill.
Clifton Chemical Co., 247 Front St., N. Y.
Cole Laboratories, 22-19 37th Ave., L. I. City, N. Y.
Continental Car-Na-Var Corp., Brazil, Ind.
Davies-Young Soap Co., Dayton, O.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 Susquehanna Ave., Phila.
Haag Laboratories, 6101 S. May St., Chicago
Higley Chem. Co., Dubuque, Iowa
Hild Floor Machine Co., 1313 W. Randolph St., Chicago
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Mathieson Alkali Works, 60 E. 42nd St., N. Y.
M & H Laboratories, 2705 Archer Ave., Chicago
Midland Labs., Dubuque, Ia.
National Oil Products Co., Harrison, N. J.
Palmer Products, Inc., Waukesha, Wisc.
Phila. Quartz Co., 125 S. 3rd St., Philadelphia
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
Skotch Prods. Corp., 1220 W. 6th St., Cleveland
Tesco Chem. Co., P. O. Box 4748, Atlanta
Thompson-Hayward Chem. Co., 2915 S. W. Blvd.,
Kansas City, Mo.
Transmotive Labs., 2550 S. Michigan Ave., Chicago
Trojan Prods. & Mfg. Co., 3130 S. Wabash Ave., Chicago
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Uncle Sam Chem. Co., 329 E. 29th St., N. Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave.,
Chicago
Universal Chem Corp., 35 E. Market St., Akron, O.
Washine-National Sands, Inc., 37-02 Northern Blvd.,
Long Island City
Wilco Co., 6800 McKinley Ave., Los Angeles
Chas. W. Young & Co., 1247 N. 26th St., Philadelphia

SADDLE SOAP

Armour & Co., 1355 W. 31st St., Chicago
Asco Chemical Co., 641 Lexington Ave., Brooklyn
Baum's Castorine Co., Rome, N. Y.
Davies-Young Soap Co., Dayton, O.
James Good, Inc., 2116 Susquehanna Ave., Phila.
Harley Soap Co., Pierce & Orthodox Sts., Philadelphia
R. M. Hollingshead Corp., Camden, N. J.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
National Oil Products Co., Harrison, N. J.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
Rome Soap Mfg. Co., Rome, N. Y.
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
J. A. Tumbler Labs., 423 Hanover St., Baltimore

SAL AMMONIAC (see AMMONIUM CHLORIDE)

SAL SODA

(see also Dealers)

American Cyanamid & Chemicals Corp.,
30 Rockefeller Plaza, N. Y.
Church & Dwight Co., 70 Pine St., N. Y.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
E. I. du Pont de Nemours & Co., Wilmington, Del.
General Chemical Co., 40 Rector St., N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mathieson Alkali Works, 60 E. 42nd St., N. Y.
Mechling Bros. Chemical Co., Camden, N. J.
Pittsburgh Plate Glass Co., Columbia Chem. Div.,
Grant Bldg., Pittsburgh
E. M. Sergeant Pulp & Chemical Co.,
Empire State Bldg., N. Y.
Solvay Sales Corp., 40 Rector St., N. Y.
Joseph Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

SALT (Common Salt)

(see also Dealers)

Diamond Alkali Co., 533 Smithfield St., Pittsburgh
Dow Chemical Co., Midland, Mich.
Hooker Electrochemical Co., Niagara Falls, N. Y.
International Salt Co., 475 Fifth Ave., N. Y.
Jefferson Salt & Mining Co., Louisville, Ky.
LeRoy Salt Co., LeRoy, N. Y.
Myles Salt Co., 1007 Camp St., New Orleans, La.
Pittsburgh Plate Glass Co., Columbia Chemical Div.,
Grant Bldg., Pittsburgh
Pomeroy Salt Co., Pomeroy, Ohio
Remington Salt Co., Ithaca, N. Y.
Saginaw Salt Prods. Co., Saginaw, Mich.
Solvay Sales Corp., 40 Rector St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.

SALT WATER SOAP (Marine Soaps)

Antiseptol Co., 5524 Northwest Highway, Chicago
Armour Soap Wks., 1355 W. 31st St., Chicago
Buck-Jack Co., 3056 Federal St., Baltimore
J. Eavenson & Sons, Camden, N. J.
Hewitt Soap Co., Dayton, O.
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Los Angeles Soap Co., Los Angeles
National Oil Products Co., Harrison, N. J.
Newell-Gutradt Co., San Francisco
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati, O.
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Chicago
M. Werk Co., Cincinnati

SAMPLE CASES

Arrow Mfg. Co., 15th & Hudson Sts., Hoboken, N. J.
Knickerbocker Case Co., 2311 N. Crawford Ave., Chicago

SANDALWOOD OIL (see ESSENTIAL OILS)

SAPONIN (Ext. Soap Bark)

Dodge & Olcott Co., 180 Varick St., N. Y.
A. C. Drury & Co., 219 East North Water St., Chicago
Enco Chem. Corp., 441 Lexington Ave., N. Y.

SAPONIN (Contd.)

Florasynth Labs., 1513 Olmstead Ave., Bronx, N. Y.
Fritzsche Brothers, Inc., 76 Ninth Ave., N. Y.
Hoffman-La Roche, Inc., Nutley, N. J.
Interstate Color Co., 5 Beekman St., N. Y.
Geo. Lueders & Co., 427 Washington St., N. Y.
Merck & Co., Rahway, N. J.
S. B. Penick & Co., 50 Church St., N. Y.
Ungerer & Co., 161 Sixth Ave., N. Y.

SASSAFRAS, Artificial (see AROMATIC CHEMICALS)

SCIENTIFIC INSTRUMENTS (see INSTRUMENTS)

SCOURING POWDERS

American Soap Powder Wks., Inc., 98 Van Dyke St., Brooklyn
American Soap & Washoline Co., Cohoes, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Baum's Castorine Co., 200 Mathew St., Rome, N. Y.
Buck-Jack Co., 3056 Federal St., Baltimore
Chemical Mfg. & Distrib. Co., Easton, Pa.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Churchill Mfg. Co., Galesburg, Ill.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Cowles Detergent Co., 7016 Euclid Ave., Cleveland
Cudahy Packing Co., 221 N. La Salle St., Chicago
Du Bois Soap Co., Cincinnati, O.
Fuld Bros., 702 S. Wolfe St., Baltimore
Hercules Powder Co., Wilmington
Higley Chem. Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hysan Prods., 58 E. Cullerton St., Chicago
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
Midland Labs., Dubuque, Ia.
National Milling & Chem. Co., Manayunk, Philadelphia
Pacific Chem. Co., 1412 N. Main St., Los Angeles
Peck's Prods. Co., 5224 N. 2nd St., St. Louis
Penna. Salt Mfg. Co., 1000 Widener Bldg., Philadelphia
Pittsburgh Plate Glass Co., Columbia Chemical Div., Grant Bldg., Pittsburgh
Port Huron Detergent Co., Port Huron, Mich.
Procter & Gamble Co., Cincinnati
Puritan Chem. Co., 209 Peters St., S.W., Atlanta
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Solvay Sales Corp., 40 Rector St., N. Y.
S. & S. Soap Co., 324 Barretto St., Bronx, N. Y.
John T. Stanley Co., 642 W. 30th St., N. Y.
Stevens Soap Corp., 200 Sullivan St., Brooklyn
Swift & Co., Chicago
Tesco Chem. Co., P. O. Box 4748, Atlanta
Trojan Products & Mfg. Co., 3130 S. Wabash Ave., Chicago
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago
Chas. W. Young & Co., 1247 N. 26th St., Philadelphia

SCOURING SOAPS (Bars)

American Soap & Washoline Co., Cohoes, N. Y.
Armour Soap Works, 1355 W. 31st St., Chicago
Baum's Castorine Co., Rome, N. Y.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Cudahy Packing Co., 221 N. La Salle St., Chicago
James Good, Inc., 2116 E. Susquehanna Ave., Philadelphia
Hewitt Soap Co., Dayton, O.
Los Angeles Soap Co., Los Angeles
National Soap Co., P. O. Box 1631, Tacoma, Wash.
Peck's Products Co., St. Louis
Port Huron Detergent Co., Port Huron, Mich.
Procter & Gamble Co., Cincinnati, O.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Chicago
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago
Chas. W. Young & Co. 1247 N 26th St., Phila.

SCREENS (Screening Equipment)

C. O. Bartlett & Snow Co., 6200 Harvard Ave., Cleveland, O.
B. F. Gump Co., 412 S. Clinton St., Chicago
J. H. Day Co., Cincinnati
J. M. Lehmann Co., Lyndhurst, N. J.
Ludlow-Sayer Wire Co., St. Louis, Mo.
Orville Simpson Co., 1230 Knowlton St., Cincinnati
Sprout, Waldron & Co., Muncy, Pa.
Stedman's Fdy. & Machine Works, Aurora, Ind.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Sturtevant Mill Co., Boston, Mass.
W. S. Taylor Co., Cleveland, O.
Wickwire Spencer Steel Co., 500—5th Ave., N. Y.

SCRUBBING MACHINES (see FLOOR MACHINES)

SCRUBBING SOAPS, LIQUID (see FLOOR SCRUB SOAPS)

SEALING MACHINERY (Bags)

B. F. Gump Co., 412 S. Clinton St., Chicago
New Jersey Machine Corp., Hoboken, N. J.
Stokes & Smith Co., 4915 Summerdale Ave., Philadelphia
Weigh Right Automatic Scale Co., Joliet, Ill.

SEALING MACHINERY (Cartons)

Burt Machine Co., 401 E. Oliver St., Baltimore
Consolidated Products Co., 15 Park Row, N. Y. (Used)
J. L. Ferguson Co., Joliet, Ill.
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
Houchin Machinery Co., Hawthorne, N. J.
Johnson Automatic Sealer Co., Battle Creek, Mich.
R. A. Jones & Co., Cincinnati, O.
Karl Kiefer Machine Co., 919 Martin St., Cincinnati
New Jersey Machine Corp., Hoboken, N. J.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
Pneumatic Scale Corp., North Quincy, Mass.
F. B. Redington Co., 112 S. Sangamon St., Chicago
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
Stokes & Smith Co., 4915 Summerdale Ave., Philadelphia
Triangle Package Machinery Co., 906 Spaulding Ave., Chicago
Weigh Right Automatic Scale Co., Joliet, Ill.

SEEDS, POISONED (see POISONED SEEDS)

SESQUICARBONATE OF SODA (for Bath Salts, etc.), (see SODIUM SESQUICARBONATE)

SHAMPOO BASE and LIQUID (SOAP BASE)

Ampion Corp., 4-88 47th Ave., L. I. City, N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Armour Soap Wks., 1355 W. 31st St., Chicago
Baum's Castorine Co., 200 Mathew St., Rome, N. Y.
Chemical Mfg. & Dist. Co., Easton, Pa.
Chemical Compounding Corp., 262 Huron St., Bklyn, N.Y.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago

POWCO

LABORATORY CONTROLLED

BRAND

REG. U.S. PAT. OFF

NEUTRAL POWDERED SOAP

Here's an ideal soap for your dentifrices and cosmetics. If you manufacture a product requiring soap, try Powco Brand, the *laboratory controlled neutral* powdered soap.

Powco Brand *Neutral* Powdered Soap is made under strict laboratory control to maintain its rigid uniformity of physical and chemical properties so that once you adopt Powco Brand Soap you can be sure that your base will not vary.

Use *Powco Brand* and you use the finest — better quality soap at a saving.

JOHN POWELL & CO., INC.
118 East 32nd Street, New York City.
POWCO laboratory controlled SOAPS

SHAMPOO BASE AND LIQUID (Contd.)

Clifton Chemical Co., 247 Front St., N. Y.
Columbia Soap & Chem. Co., Inc., 324 Leavenworth St., San Francisco
James Counts Soap Co., 2nd and Washington Aves., St. Louis
Davies-Young Soap Co., Dayton, O.
Delta Chemical Co., 4 Payson Ave., N. Y.
Eagle Soap Corp., Huntington, Ind.
J. Eavenson & Sons, Camden, N. J.
Fuld Bros., 702 S. Wolfe St., Baltimore
James Good, Inc., 2116 Susquehanna Ave., Phila.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Harley Soap Co., Pierce & Orthodox Sts., Phila.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
Kranich Soap Co., 54 Richards St., Brooklyn
Lewis Soap & Chem. Co., Oakland, Calif.
Midland Labs., Dubuque, Iowa
Napthole, Inc., 15 E. 26th St., N. Y.
National Oil Products Co, Harrison, N. J.
Palmer Products, Inc., Waukesha, Wisc.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
Richards Sales Corp., Warren and Morris Sts., Jersey City, N. J.
Theo. B. Robertson Prods. Co., 700 W. Division St. Chicago
Rochester Germicide Co., Rochester, N. Y.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Sanitax Brush & Prods. Co., 230 E. Ohio St., Chicago
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
Superior Soap Corp., 121 Nostrand Ave., Bklyn., N. Y.
Swift & Co., Chicago
Tesco Chem. Co., P. O. Box 4748, Atlanta
Thompson-Hayward Chem. Co., Kansas City, Mo.
J. A. Tumbler Labs., 423 Hanover St., Baltimore
Uncle Sam Chem. Co., 329 E. 29th St., N. Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Universal Chem. Corp., 35 E. Market St., Akron, O.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago
Chas. W. Young & Co., 1247 N. 26th St., Phila.

SHAMPOOS, POWDER AND CAKE

Ampion Corp., 4-88 47th Ave., L. I. City, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Davies-Young Soap Co., Dayton, O.
Emulsol Corp., 59 E. Madison St., Chicago
Kranich Soap Co., 60 Richard St., Bklyn.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
National Oil Products Co., Harrison, N. J.
North Coast Chem. & Soap Wks., Seattle, Wash.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
John Powell & Co., 114 E. 32nd St., N. Y.
Procter & Gamble Co., Cincinnati
Richards Sales Corp., Jersey City, N. J.
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
Superior Soap Corp., 121 Nostrand Ave., Bklyn., N. Y.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SHAMPOOS, SOAPLESS

Ampion Corp., 4-88—47th Ave., L. I. City, N. Y.
Davies-Young Soap Co., Dayton, O.
Emulsol Corp., 59 E. Madison St., Chicago
Fuld Bros., 702 S. Wolfe St., Baltimore
General Drug Co., 644 Pacific St., Bklyn.
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Lewis Soap & Chem. Co., Oakland, Calif.
Michel Export Co., 95 Broad St., N. Y.
Monsanto Chem. Co., St. Louis
National Oil Products Co., Harrison, N. J.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
Richards Sales Corp., Warren and Morris Sts., Jersey City, N. J.
Sanitax Brush & Prods. Co., 230 E. Ohio St., Chicago
Sherwood Refining Co., Englewood, N. J.
L. Sonneborn Sons, Inc., 88 Lexington Ave., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Bklyn, N. Y.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago

SHAVING CREAM (Soap and Brushless)

Ampion Corp., 4-88 47th Ave., L. I. City, N. Y.
Cenol Co., 4250 N. Pulaski Ave., Chicago
Clifton Chemical Co., 247 Front St., N. Y.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Nat'l Oil Products Co., Harrison, N. J.
Procter & Gamble Co., Cincinnati
Richards Sales Corp., Warren and Morris Sts., Jersey City, N. J.
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SHAVING CREAM BASE

Clifton Chemical Co., 247 Front St., N. Y.
Nat'l Oil Products Co., Harrison, N. J.
John Powell & Co., 114 E. 32nd St., N. Y.
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SHAVING SOAP (Cake, Stick, Powder)

Colgate-Palmolive-Peet Co., Jersey City, N. J.
J. Eavenson & Sons, Del. and Penn Sts., Camden, N. J.
Hewitt Soap Co., Dayton, O.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Los Angeles Soap Co., Los Angeles
Procter & Gamble Co., Cincinnati
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N. Y.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SHIPPING CASES (see BOXES)

SHEEP DIPS (see CATTLE DIPS)

SHELLAC

Barrett Varnish Co., 1532 S. 50, Cicero, Ill.
Bradshaw Praeger & Co., 3248 W. 47th Place, Chicago
Chas. Comerford Shellac Co., 509 Third Ave., Brooklyn, N. Y.
Wm. Diehl & Co., 336 W. 42nd St., N. Y. 18
Gillespie-Rogers-Pyatt Co., 80 John St., N. Y.
Haeuser Shellac Co., 52 Warren St., Brooklyn, N. Y.
George H. Lincks, 155 John St., N. Y.
Mac-Lac Co., Inc., 127 Maiden Lane, N. Y.
Mantrose Corp., 136 41st St., Brooklyn, N. Y.
Twin City Shellac Co., 338 Flushing Ave., Brooklyn
Wm. Zinsser & Co., 516 W. 59th St., N. Y.

SHOE POLISH DAUBERS

Alba Cook Co., Jersey City, N. J.
American Cork Specialty Co., 115 Sutton St., Bklyn, N.Y.
Applicator Brush Co., 87 Frankfort St., N. Y.
Applicator Co., 1512 Atlantic Ave., Bklyn., N. Y.
Armstrong Cork Co., Lancaster, Pa.

SIFTER TOP CANS (see CANS, Sifter Top)

Ampion Dispensers Still Available

PRODUCTS

Liquid Soap Dispensers
Liquid Soaps & Bases
Oils, Soaps, & Liquids
Disinfectants
Insecticides
Waxes & Polishes
Deodorizing Blocks
Containers
and Allied Products

Some models of the AMPION line of soap dispensers, made from a permitted Victory alloy, are still available, in limited quantities only. Replacement parts also obtainable. It is more important today than ever before to keep dispenser installations in good repair in view of the difficult situation on new dispensers.

Our complete line of Sanitation Chemical Products are also at your service.

AMPION CORPORATION
4-88 FORTY SEVENTH AVE.
LONG ISLAND CITY, N. Y.

SIFTING EQUIPMENT (see SCREENS)

SILICA

American Colloid Co., 363 W. Superior St., Chicago
California Industrial Minerals Co., Friant, Calif.
Chas. B. Chrystal Co., 16 Hudson St., N. Y.
Dicalite Co., 120 Wall St., N. Y.
E. I. du Pont de Nemours Co., Wilmington, Del.
Goris & Arnstein, 1207 W. 37th, Chicago
K. F. Griffiths & Co., 110 E. 42nd St., N. Y.
Hammill & Gillespie, 225 Broadway, N. Y.
Harshaw Chem. Co., Cleveland
Illinois Silica Co., Cairo, Ill.
Innis, Speiden & Co., 117 Liberty St., N. Y.
International Silica Co., Cairo, Ill.
N. J. Pulverizing Co., Lewistown, Pa.
Jas. H. Rhodes & Co., 153 W. Austin Ave., Chicago
L. A. Salomon & Bro., 216 Pearl St., N. Y
Silica Prods Co., 700 Baltimore Ave., Kansas City, Mo.
A. E. Starkie, 5461 W. Division St., Chicago
Tamms Silica Co., 228 N. La Salle St., Chicago
Witco Chemical Co., 295 Madison Ave., N. Y.

SILICATE OF SODA (see SODIUM SILICATE)

SILICO FLUORIDES (see SODIUM SILICOFLUORIDE)

SLABBERS (see SOAP MACHINERY)

SOAP BARK and EXTRACT (see SAPONIN)

SOAP, CASTILE (see CASTILE SOAP)

SOAP, CHIP (see CHIP SOAP)

SOAP COLORS (See COLORS)

SOAP DIES

Anthony J. Fries & Son Co., 717 Sycamore St., Cincinnati
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259 46th St., Brooklyn, N. Y.
Jas. H. Matthews & Co., 3942 Forbes St., Pittsburgh
Mooney & Bueter, 564 W. Randolph St., Chicago
I. Schwartz Engraving & Die Works, 38 W. 21st St., N. Y.

SOAP DISPENSERS (Liquid)

Ampion Corp., 4-88 47th Ave., L. I. City, N. Y.
American Dispenser Co., 215 Fourth Ave., N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Bobrick Mfg. Corp., 2619 Santa Fe Ave., Los Angeles
Clifton Chemical Co., 247 Front St., N. Y.
Davies-Young Soap Co., Dayton, O.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
Garnet Chem. Corp., 911 N. Lumber St., Allentown, Pa.
R. M. Hollingshead Corp., Camden, N. J.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago
Moore Bros. Co., 100 Warren St., N. Y.
Palmer Products, Inc., Waukesha, Wisc.
Rochester Germicide Co., Rochester, N. Y.

...do they know you?

DO buyers know your firm and something about your products *before* the salesman gets there, — or do your salesmen have to start cold with every new prospect on every product?

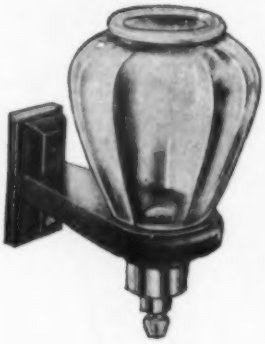
You can pave the way for your salesmen by making your firm and your products better known in *advance* by advertising in representative trade papers. A buyer is always more willing to listen to salesmen who are *definitely identified* by their firm's advertising.

For example, if you want to help your salesmen do more business in the soap, insecticide, chemical specialty, and allied household products industries, you can do the job effectively and at low cost by advertising in

SOAP *and Sanitary Chemicals*
254 WEST 31st STREET *Member of the A.B.C.* NEW YORK

Sanitary Supplies

by CLIFTON



DENDRON PUSH-UP SOAP DISPENSER

Fool-proof, trouble proof, cannot leak, clog or get out of order. Sturdy and neat in appearance. No intricate mechanisms. Easy to clean and fill. Made from high tensile strength composition in high gloss black lacquer finish.

featuring

★ QUALITY
★ PRICE
★ SERVICE

DEODORETTE BLOCKS

LIQUID SOAPS and BASES

FOAMWEL LIQUID SOAP
CLIFTON LIQUID SOAP CONCENTRATE
CLIFTON LIQUID SOAP BASE
SEMI-CASTILE LIQUID SOAP
SHAMPOO SOAPS

DISINFECTANTS, ETC.

PINE TREE DISINFECTANT
CRESOLENE DISINFECTANT
HIGH COEFFICIENT DISINFECTANT

VEGETABLE SOAP CLEANSERS

PINE-GLOSS CLEANSER
SHINE-BRITE
METEOR OIL SOAP
DAZZLE SILVER POLISH (Mineral Paste)
GREEN SOAPS

DEODORIZING BLOCKS

DEODORETTES—Popular priced cakes packed in attractive resale containers
SENTINELS—Deodorizing Cakes De Luxe
MOTH CAKES—Pure Paradichlorbenzene

POLISHES, ETC.

RUB-NO LIQUID WAX
PREPARED LIQUID WAX
DAZZLE METAL POLISH
GRADE "A" FURNITURE CREAM
LUSTRA BAR OIL
MOP-IN-VAR

PACKING—To meet your requirements, from 55 gal. drums down to 1 gal. jugs, for liquids. Liquid soap base, oil soap, etc., put up in 450-lb. bbls., 250 lb. ½ bbls., 140 lb. kegs, 65 lb. tubs.

EXACTNESS—Every product described will do exactly what it is intended to do efficiently and economically. No bombastic or impossible claims are made and no Clifton representative is knowingly permitted to make such claims.

CLIFTON CHEMICAL CO., INC.

246 FRONT STREET NEW YORK, N. Y.

SOAP DISPENSERS (Liquid) (Contd.)

Uncle Sam Chem. Co., 329 E. 29th St., N. Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

SOAP DISPENSERS (Powder)

Ampion Corp., 4-88 47th Ave., L. I. City, N. Y.
American Dispenser Co., 215 Fourth Ave., N. Y.
Bobrick Mfg. Corp., 2619 Santa Fe Ave., Los Angeles
Clifton Chemical Co., 247 Front St., N. Y.
Federal Tool Corp., 412 N. Leavitt St., Chicago
Fuld Bros., 702 S. Wolfe St., Baltimore
R. M. Hollingshead Corp., Camden, N. J.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago
Moore Bros. Co., 100 Warren St., N. Y.
Packwood Mfg. Co., St. Louis
Palmer Products, Inc., Waukesha, Wisc.
Presto Mfg. Co., 770 Cromwell Ave., St. Paul, Minn.
Rochester Germicide Co., Rochester, N. Y.
Skotch Products Corp., 1220 W. 6th St., Cleveland
Sugar Beet Prods. Co., Saginaw, Mich.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Vasco Products Co., Elmira, N. Y.

SOAP DISPENSING SYSTEMS (Multi-unit with Tanks)

Ampion Corp., 4-88 47th Ave., L. I. City, N. Y.
American Dispenser Co., 215 Fourth Ave., N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Bobrick Mfg. Corp., 2619 Santa Fe Ave., Los Angeles
Clifton Chemical Co., 247 Front St., N. Y.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., 702 S. Wolfe St., Baltimore
R. M. Hollingshead Corp., Camden, N. J.
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago
Moore Bros. Co., 100 Warren St., N. Y.
Palmer Products, Inc., Waukesha, Wis.
Rochester Germicide Co., Rochester, N. Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
West Disinfecting Co., Long Island City, N. Y.

SOAP DRYERS (see DRYERS)

SOAP, FLAKE (see CHIP SOAP)

SOAP FRAMES (see FRAMES)

SOAP KETTLES (see KETTLES)

SOAP, LINSEED OIL (see POTASH SOAPS)

SOAP MACHINERY

Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259—46th St., Brooklyn
J. M. Lehmann Co., Lyndhurst, N. J.

Plan **LEHMANN** *Quality*

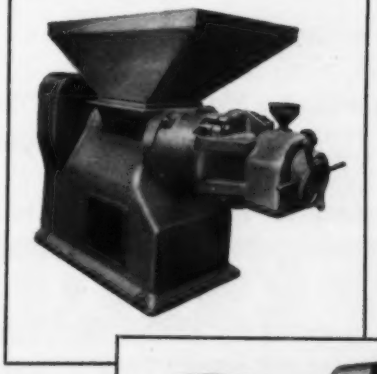
for the

Work of "TOMORROW"

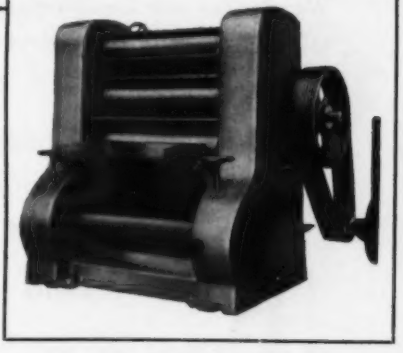
When it is again possible to build soap machinery, LEHMANN will make the finest mills and plodders that scientific design, expert workmanship and the best materials can produce.

Under stress of war conditions LEHMANN machines have revealed a sturdiness and efficiency of production which attest their built-in quality.

In planning your peace-time production LEHMANN equipment, proved by performance, is your logical choice.



LEHMANN SOAP PLODDER



LEHMANN SOAP MILL

LEHMANN

The Standard for Quality in Machinery

THE LEHMANN SERVICE DEPARTMENT is always available to keep your machines at their highest productivity.

J. M. LEHMANN COMPANY, INC.

MAIN OFFICE & FACTORY, LYNDHURST, NEW JERSEY

HOUCHIN MACHINERY CO., Inc.

HAWTHORNE, N. J., U. S. A.

Manufacturers of Soap Making Equipment for making

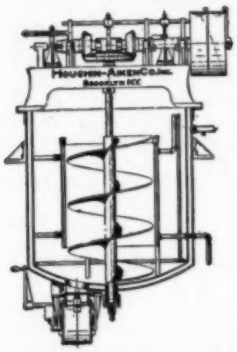
LAUNDRY SOAP
TEXTILE SOAP
TOILET SOAP
CASTILE SOAP

SCOURING SOAP — CAKES, PASTE AND POWDER

Automatic Soap Cutter

Capacity 60-120 frames per day

Perfection Crutcher



The Standard machine for making cold made, half-boiled and floating soaps.

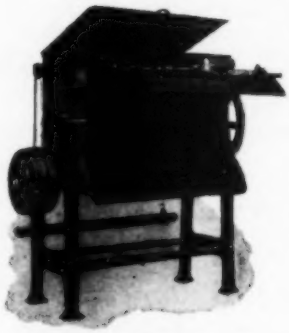
Equipment for Making Soap by the Boiled, Half-Boiled or Cold Process.

Equipped to Furnish Complete New Plants or to Remodel Old Plants.

For Machining Toilet Soap,

We offer our new Combination consisting of special plodders and mills. It is more economical and very satisfactory. Write for information.

Ideal Amalgamator



Designed so soap can be emptied into hopper of mill or plodder.

Complete Equipment for Producing
Paradichlorbenzene Blocks
Candle Machines

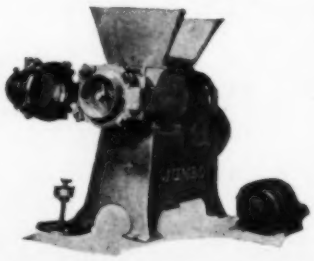
Your Inquiries Will Be Appreciated

Type F Roller Mill

Rolls 18" x 40", water cooled. Heavy frames, large bearings. Gears run in oil. Gears and bearings entirely covered.

The standard plodder used in the soap industry. It is also used in our mill-less method unit.

Jumbo Plodder



SOAP MACHINERY (Contd.)

Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago
H. K. Porter Co., 49th and Harrison Sts., Pittsburgh

SOAP PAPER (Soap Sheets) (also Soaped Cloth)

Charles F. Hubbs & Co., 383 Lafayette St., N. Y.
Moore Bros. Co., 100 Warren St., N. Y.
Rosefelt Sale Builders, 740 N. Plankinton Ave., Milwaukee, Wisc.
Velso Products Co., Ottumwa, Iowa

SOAP POWDER MILLS

Abbe Engineering Co., 50 Church St., N. Y.
Consolidated Products Co., 15 Park Row, N. Y. (Used)
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 359 46th St., Brooklyn, N. Y.
J. M. Lehmann Co., Lyndhurst, N. J.
Newman Tallow & Soap Mach. Co., 1051 W. 35th, Chicago (Used)
Prater Pulverizing Co., 1825 55th Ave., Chicago
Stein Equipment Corp., 426 Broome St., N. Y. (Used)

SOAP, POWDERED (White neutral powdered soap, powdered castile soap, etc., 95-99 per cent anhydrous soap. Do not confuse with Soap Powders.)

Armour Soap Wks., 1355 W. 31st St., Chicago
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Conti Products Corp., 155 Varick St., N. Y.
J. Eavenson & Sons, Camden, N. J.
J. L. Hopkins & Co., 220 Broadway, N. Y.
Insto Co., 110 Center St., Los Angeles
Kranich Soap Co., 60 Richards St., Brooklyn, N. Y.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
S. B. Penick & Co., 50 Church St., N. Y.
John Powell & Co, 114 E. 32nd St., N. Y.
R J. Prentiss & Co., 80 John St., N. Y.
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Ailen B. Wrisley Co., 6801 W. 56th St., Chicago

SOAP PERFUMES

van Ameringen-Haebler, Inc., 315 Fourth Ave., N. Y.
Aromatic Products, Inc., 15 E. 30th St., N. Y.
Bush Pan America Ltd., 136 Liberty St., New York
Ph. Chaleyer, Inc., 160 E. 56th St., N. Y.
Antoine Chiris Co., Inc., 115 E. 23rd St., N. Y.
Compagnie Duval, 121 E. 24th St., N. Y.
Compagnie Parento, Croton-on-Hudson, N. Y.
Dodge & Olcott Co., 180 Varick St., N. Y.
P. R. Dreyer Inc., 119 W. 19th St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Felton Chemical Co., 603 Johnston Ave., Brooklyn
Firmenich & Co., 135 5th Ave., N. Y.
Florasynth Labs., 1513 Olmstead Ave., Bronx, N. Y.
Rene Forster Co., 404—4th Ave., N. Y.
Benj. French, Inc., 160 5th Ave., N. Y.
Fritzsche Bros., Inc., 76 Ninth Ave., N. Y.
Fuld Bros., 702-710 S. Wolfe St., Baltimore
General Drug Co., 644 Pacific St., Brooklyn, N. Y.
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
Kay-Fries Chemicals, Inc., 180 Madison Ave., N. Y.
Lautier Fils, 158 W. 18th St., N. Y.
Geo. Lueders & Co., 427 Washington St., N. Y.
Magnus, Mabee & Reynard, 16 Desbrosses St., N. Y.
Naugatuck Aromatics, 254 Fourth Ave., N. Y.
Neumann-Buslee & Wolfe, 224 W. Huron St., Chicago

"CONSOLIDATED"

REBUILT SOAP MACHINERY

SPECIAL ITEMS

3—Ralston automatic Soap Presses.
60—Bronze Soap Dies.
4—Pkge. Machy. Co. Soap Wrapping Machines, type N1.
1—Blanchard No. 10A Soap Powder Mill.
1—Houchin Jumbo 10" Plodder.

Crutchers, Soap Kettles, Powder Mixers, Granite Mills, Plodders, Slabbers
Foot and Automatic Soap Presses, Cutting Tables, Pulverizers, Soap Pumps, Soap Chippers
Filter Presses, Soap Frames, Powder Fillers, Labellers, Tanks, Boilers

Soap Plodder

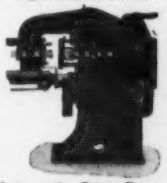
Perfection Crutcher

Standard Soap Frame

WANTED
YOUR IDLE MACHINERY
WILL BUY FROM SINGLE ITEMS
TO COMPLETE PLANTS

4-Roll Soap Mill

Para Block Press


Automatic Soap Press

CONSOLIDATED PRODUCTS CO., INC.
15-21 PARK ROW NEW YORK, N. Y.
BArclay 7-5500 Cable Address: Equipment
We buy your idle Machinery—Send us a list.

Special Aromatics
for the
Soap Perfumer's Needs
Creating aromatics and perfume compounds to meet the specialized needs of the soap and cosmetic industry has long been an important part of Givaudan service as a leading manufacturer of aromatic chemicals. And many of the most successful and popular of soap perfumes have been supplied by Givaudan.
Our long experience, skilled technical staff, and complete laboratory and development facilities are available to meet your needs. Consult us on your present requirements. We have a well-balanced stock of materials available for use in meeting your current demands. Your inquiry will receive our prompt and considered attention.
GIVAUDAN-
DELAWANNA, INC.
330 WEST 42nd STREET • NEW YORK, N.Y.

SOAP PERFUMES (Contd.)

New York Aromatics Co., 153 Waverly Pl., N. Y.
Norda Essential Oil & Chem. Co., 601 W. 16th St., N. Y.
Orbis Products Corp., 215 Pearl St., N. Y.
Polak & Schwartz., Inc., 667 Washington St., N. Y.
Polak's Frutal Works, 36-14 35th St., L. I. City, N. Y.
Roure-Dupont, Inc., 366 Madison Ave., N. Y.
Schimmel & Co., 601 W. 26th St., N. Y.
Edwin Seebach Co., 912 Broadway, N. Y.
Standard Synthetics Co., 30 W. 26th St., N. Y.
Synfleur Scientific Labs., Monticello, N. Y.
Syntomatic Corp., 114 E. 32nd St., N. Y.
Tombarel Prods. Corp., 12 E. 22nd St., N. Y.
Ungerer & Co., 161 Sixth Ave., N. Y.
Van Dyk & Co., Belleville, N. J.
Albert Verley, Inc., 232 E. Ohio St., Chicago

SOAP POWDERS
(Do not confuse with pure powdered soaps)

American Soap Powder Wks., Inc., 98 Van Dyk St., Brooklyn
American Soap & Washoline Co., Cohoes, N. Y.
Armour Soap Wks., 1355 W. 31st St., Chicago
Baums Castorine Co., 200 Mathew St., Rome, N. Y.
Beach Soap Co., Lawrence, Mass.
Cowles Detergent Co., 7016 Euclid Ave., Cleveland
Chemical Mfg. & Dist. Co., Easton, Pa.
Cudahy Packing Co., 221 N. La Salle St., Chicago
Du Bois Soap Co., Cincinnati
J. Eavenson & Sons, Camden, N. J.
Haskins Bros. & Co., Omaha
Hercules Powder Co., Wilmington, Del.
Hewitt Soap Co., Dayton, O.
Hockwald Chemical Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
H. Kohnstamm & Co., 91 Park Pl., N. Y.
Geo. E. Marsh Co., 200 Broadway, Cambridge, Mass.
Napthole, Inc., 15 E. 26th St., N. Y.
National Milling & Chem. Co., Manayunk, Phila.
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Port Huron Detergent Co., Port Huron, Mich.
Procter & Gamble Co., Cincinnati
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
S. & S. Soap Co., 324 Barretto St., Bronx, N. Y.
Stevens Soap Corp., 200 Sullivan St., Brooklyn
John T. Stanley Co., 642 W. 30th St., N. Y.
Swift & Co., Union Stock Yards, Chicago
Vasco Prods. Co., Elmira, N. Y.
Vliet Soap Co., 638 Monroe St., Brooklyn
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
M. Werk Co., St. Bernard, Cincinnati
Western Chem. & Mfg. Co.,
4032 S. Wentworth Ave., Chicago
Chas. W. Young & Co., Phila.

SOAP PRESSES (see PRESSES)

SOAP SHEETS (see SOAP PAPER)

SOAP SOLUTIONIZING DEVICE (Solutionizing and dispensing drums for soft soaps)

Clifton Chemical Co., 247 Front St., N. Y.
Davies-Young Soap Co., Dayton, O.
Rudolph Guth, Inc., 9604 Meech Ave., Cleveland, Ohio

SOAP SLABBERS (see SOAP MACHINERY)

SOAP STOCK (Boiled down cotton oil soap stock, etc.)

(see also Brokers and Dealers)

Armour & Co., 1355 W. 31st St., Chicago
Brode Corp., Memphis, Tenn.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Wm. H. Floyd & Co., Los Angeles
H. Hentz & Co., 60 Beaver St., N. Y.
Portsmouth Cotton Oil Refining Co., Portsmouth, Va.
Procter & Gamble Co., Cincinnati, O.
Southern Cotton Oil Co., 21 West St., N. Y.
A. E. Staley Mfg. Co., Decatur, Ill.
Welch, Holme & Clark, Inc., 563 Greenwich St., N. Y.

SOAP VALVES (see Soap Dispensing Systems)

SOAP, WHALE OIL (see WHALE OIL SOAP)

SOAP WRAPPING MACHY. (see WRAPPING MACHY.)

SOAPLESS DETERGENTS (see DETERGENTS, SYNTHETIC)

SOAPLESS SHAMPOOS (see SHAMPOOS SOAPLESS)

SOAPS, AUTO (see POTASH SOAPS)

SOAPS, FLOATING (see FLOATING SOAPS)

SOAPS, GRANULATED (see LAUNDRY SOAPS, GRANULATED)

SOAPS, LIQUID (see POTASH SOAPS)

SOAPS, MEDICINAL, CAKE (see MEDICINAL SOAPS, CAKE)

SOAPS, MOTTLED (see MOTTLED SOAPS)

SOAPS, PINE SCRUB (see PINE SCRUB SOAPS)

SOAPS, SCOURING (see SCOURING SOAPS)

SOAPS, SCRUBBING (see FLOOR SCRUB SOAPS)

SOAPS, SURGICAL (see POTASH SOAPS)

SOAPS, TEXTILE (see TEXTILE SOAPS)

SODA ASH

(see also Dealers)

American Cyanamid & Chemicals Corp., 30 Rockefeller Plaza, N. Y.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh

COLUMBIA CHEMICALS
for best results in soap making

CAUSTIC SODA

Liquid	—50% and 73% NaOH
Solid	—76% Na_2O
Flake	—76% Na_2O, Fine and Medium
Ground and Powdered	—76% Na_2O

Columbia Caustic Soda is especially desirable for the manufacture of soap because it is produced to unvarying high standards, free from impurities and metallic contamination. Liquid grades are shipped in special tank cars which first made practical the shipment of 73% Caustic Soda. Insulation effectively prevents crystallization and the patented lining prevents metallic contamination in transit.

Other grades test 98-100% Sodium Hydroxide (NaOH), equivalent to 76% Na_2O. Flake Caustic Soda is prepared in two grades of fine and medium sized flakes, free of dust. The finer grade is especially suitable for repacking for household use, as is also the Ground and Powdered grade.

SODA ASH—Light and Dense

The original Columbia chemical. Nearly a half-century's experience in the manufacture of this essential chemical for soap makers has enabled the development of techniques and controls that assure uniform density and regularity of physical form and purity.

For special mixtures and repacking

SPECIAL CLEANSERS

COLUMBIA CLEANER AND CLEANSER is a specially prepared product for general use in all hand cleaning operations. A white powder containing no harmful inactive ingredients, dissolves rapidly and completely in water.

COLUMBIA PHOSFLAKE is a uniform blend of Caustic Soda and Tri Sodium Phosphate, prepared in convenient flake form. Especially adapted to machine bottle washing—quick acting, easy to handle (no dust particles to irritate the skin and throat of the operator), superior in sterilizing and rinsing properties.

MODIFIED SODAS

Mixtures of Sodium Carbonate and Sodium Bicarbonate. Especially useful in cleansing operations requiring a mild alkaline detergent-aid. Manufactured in three grades—No. 100, No. 200 and No. 300—with different degrees of alkalinity.

COLUMBIA TECHNICAL SERVICE

Columbia's Technical Service is available for developing the most advantageous uses of these or other Columbia products in your processes.

COLUMBIA CHEMICALS

PITTSBURGH PLATE GLASS COMPANY
COLUMBIA CHEMICAL DIVISION
GRANT BUILDING, PITTSBURGH 19, PENNSYLVANIA

Chicago • • • Boston • • • St. Louis • • • Pittsburgh • • • New York • • • Cincinnati • • • Cleveland • • • Minneapolis • • • Philadelphia • • • Charlotte

SODA ASH (Contd.)

Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mathieson Alkali Wks., 60 E. 42nd St., N. Y.
Niagara Alkali Co., 60 E. 42nd St., N. Y.
Penn Salt Mfg. Co., Widener Bldg., Phila.
Philipp Bros., 70 Pine St., N. Y.
Pittsburgh Plate Glass Co., Columbia Chemical Div., Grant Bldg., Pittsburgh
Solvay Sales Corp., 40 Rector St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.
Wyandotte Chem. Corp., Wyandotte, Mich.

SODA (Modified)

(*see also Dealers*)

American Cyanamid & Chemicals Corp., 30 Rockefeller Plaza, N. Y.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
E. I. du Pont de Nemours Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mathieson Alkali Wks., 60 E. 42nd St., N. Y.
Pittsburgh Plate Glass Co., Columbia Chemical Div., Grant Bldg., Pittsburgh
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
E. M. Sergeant Pulp & Chem. Co., 350 5th Ave., N. Y.
Solvay Sales Corp., 40 Rector St., N. Y.
Stauffer Chem. Co., 420 Lexington Ave., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.
Wyandotte Chem. Corp., Wyandotte, Mich.

SODIUM ACID SULFATE (see NITRE CAKE)

SODIUM ALGINATE

Kelco Co., 31 Nassau St., N. Y.

SODIUM BICARBONATE

(*see also Dealers*)

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, N. Y.
Church & Dwight Co., 70 Pine St., N. Y.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
E. I. du Pont de Nemours Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mathieson Alkali Wks., 60 E. 42nd St., N. Y.
Monsanto Chem. Co., St. Louis
Pennsylvania Salt Mfg. Co., Widener Bldg., Philadelphia
Pittsburgh Plate Glass Co., Columbia Chemical Div., Grant Bldg., Pittsburgh
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
E. M. Sergeant Pulp & Chemical Co., Empire State Bldg., N. Y.
Solvay Sales Corp., 40 Rector St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.
Welch Holme & Clark Co., 563 Greenwich St., N. Y.
Wyandotte Chem. Corp., Wyandotte, Mich.

SODIUM BICHROMATE

(*see also Dealers*)

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, N. Y.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
E. I. du Pont de Nemours Co., Wilmington, Del.
General Chem. Co., 40 Rector St., N. Y.
Merck & Co., Rahway, N. J.
Mutual Chemical Co., 270 Madison Ave., N. Y.
Natural Products Refining Co., 900 Garfield Ave., Jersey City, N. J.
Prior Chem. Corp., 420 Lexington Ave., N. Y.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
E. M. Sergeant Pulp & Chemical Co., Empire State Bldg., N. Y.
Jos. Turner & Co., Ridgefield, N. J.

SODIUM BISULFATE (see NITRE CAKE)

SODIUM CARBONATE (see SODA ASH)

SODIUM CYANIDE

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
E. I. du Pont de Nemours Co., Wilmington, Del.
General Chem. Co., 40 Rector St., N. Y.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Jos. Turner & Co., Ridgefield, N. J.

SODIUM FLUORIDE (see FLUORIDES)

SODIUM FLUOSILICATE (see SODIUM SILICOFLUORIDE)

SODIUM HYDROSULFITE

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
J. T. Baker Chem. Co., Phillipsburg, N. J.
E. I. du Pont de Nemours Co., Wilmington, Del.
General Chem. Co., 40 Rector St., N. Y.
General Dyestuffs Corp., 435 Hudson St., N. Y.
Merck & Co., Rahway, N. J.
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Royce Chemical Co., Carlton Hill, N. J.

SODIUM HYPOCHLORITE (see LAUNDRY BLEACH)

SODIUM HYPOSULFITE (Thiosulfate)

E. I. du Pont de Nemours Co., Wilmington, Del.
General Chem. Co., 40 Rector St., N. Y.
A. R. Maas Chem. Co., South Gate, Calif.
Mallinckrodt Chem. Wks., St. Louis
Merck & Co., Rahway, N. J.
Rohm & Haas, 222 W. Washington Sq., Phila.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
E. M. Sergeant Pulp & Chemical Co., Empire State Bldg., N. Y.

SODIUM LAURYL SULFATE (see SULFONATED FATTY ALCOHOLS

SODIUM METAPHOSPHATE

Blockson Chemical Co., Joliet, Ill.
Calgon, Inc., 300 Ross St., Pittsburgh
E. I. du Pont de Nemours Co., Wilmington, Del.
Victor Chem. Wks., 141 W. Jackson Blvd., Chicago

SODIUM METASILICATE

Cowles Detergent Co., 7016 Euclid Ave., Cleveland
Diamond Alkali Co., Standard Silicate Div., 535 Smithfield St., Pittsburgh
E. I. du Pont de Nemours Co., Wilmington, Del.
General Chem. Co., 40 Rector St., N. Y.
MacKenzie Labs., Front & Yarnell Sts., Chester, Pa.
Mechling Bros. Chemical Co., Camden, N. J.
Philadelphia Quartz Co., 125 So. 3rd St., Phila.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

SODIUM NAPHTHENATE

E. I. du Pont de Nemours Co., Wilmington, Del.
General Dyestuffs Corp., 435 Hudson St., N. Y.
National Aniline & Chem. Co., 40 Rector St., N. Y.

SODIUM ORTHOSILICATE

Cowles Detergent Co., 7016 Euclid Ave., Cleveland
Diamond Alkali Co., Standard Silicate Div., 535 Smithfield St., Pittsburgh
Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Phila.
Philadelphia Quartz Co., 125 So. 3rd St., Phila.

SODIUM PERBORATE

(*see also Dealers*)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
E. I. du Pont de Nemours Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Merck & Co., Rahway, N. J.

SODIUM PYROPHOSPHATE (see TETRA SODIUM PYROPHOSPHATE)

SODIUM SESQUICARBONATE

Diamond Alkali Co., 535 Smithfield St., Pittsburgh
Mathieson Alkali Wks., 60 E. 42nd St., N. Y.
Mechling Bros. Chemical Co., Camden, N. J.
Solvay Sales Corp., 40 Rector St., N. Y.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

SODIUM SESQUISILICATE

Diamond Alkali Co., Standard Silicate Div., 535 Smithfield St., Pittsburgh
Philadelphia Quartz Co., 125 So. 3rd St., Phila.
Jos. Turner & Co., Ridgefield, N. J.

SODIUM SILICATE

(*see also Dealers*)

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, N. Y.
Diamond Alkali Co., Standard Silicate Div., 535 Smithfield St., Pittsburgh
E. I. du Pont de Nemours Co., Wilmington, Del.
General Chem. Co., 40 Rector St., N. Y.
Mechling Bros. Chem. Co., Camden, N. J.
Philadelphia Quartz Co., 125 So. 3rd St., Phila.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

SODIUM SILICOFLUORIDE

American British Chem. Supplies, Inc., 180 Madison Ave., N. Y.
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
American Fluoride Corp., 151 W. 19th St., N. Y.
Armour Fertilizer Wks., Atlanta, Ga.
Blockson Chemical Co., Joliet, Ill.
E. I. du Pont de Nemours Co., Wilmington, Del.
General Chem. Co., 40 Rector St., N. Y.
Charles Hardy, Inc., 415 Lexington Ave., N. Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N. Y.
W. B. Lawson, Inc., Union Commerce Bldg., Cleveland
Merck & Co., Rahway, N. J.
Penn. Salt Mfg. Co., Widener Bldg., Phila.
E. M. Sergeant Pulp & Chemical Co., 350 5th Ave., N. Y.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Henry Sundheimer, Inc., 103 Park Ave., N. Y.
Tennessee Corp., Atlanta, Ga.
Jos. Turner & Co., Ridgefield, N. J.

SOLUBLE OILS (Sulfonated Oils)

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, N. Y.
Apex Chemical Co., 225 W. 34th St., N. Y.
Arabol Mfg. Co., 110 E. 42nd St., N. Y.
Atlantic Refining Co, 260 S. Broad St., Phila.
Napthole, Inc., 15 E. 26th St., N. Y.
Richards Sales Corp., Warren and Morris Sts., Jersey City, N. J.
Sinclair Refining Co., East Chicago, Ind.
L. Sonneborn Sons, Inc., 88 Lexington Ave., N. Y.
Jacques Wolf & Co., Passaic, N. J.

SOLVENT NAPHTHA

Anderson-Prichard Oil Corp., Oklahoma City, Okla.
Atlantic Refining Co., 260 S. Broad St., Phila.
Barrett Co., 40 Rector St., N. Y.
S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh
Commerce Petroleum Co., 2923 Lock St., Chicago
Deep Rock Oil Corp., 155 N. Clark St., Chicago
Koppers Co., Koppers Bldg., Pittsburgh, Pa.
Neville Co., Pittsburgh
Pennsylvania Refining Co., Butler, Pa.
Pittsburgh Coal Carbonization Co., Oliver Bldg., Pittsburgh
Reilly Tar & Chemical Corp., Indianapolis
Shell Oil Co., 50 W. 50th St,. N. Y.
Shell Petroleum Corp., Shell Bldg., St. Louis
Sinclair Refining Co., East Chicago, Ind.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co., (Ind.), 910 S. Michigan Ave., Chicago
Woburn Chemical Corp., Harrison, N. J.

SOLVENTS, ORGANIC (Chlorinated, etc.)

Barrett Co., 40 Rector St., N. Y.
Carbide & Carbon Chem. Corp., 30 E. 42nd St., N. Y.
Commercial Solvents Corp., 17 E. 42nd St., N. Y.
Crosby Naval Stores, Inc., Picayune, Miss.
Diamond Alkali Co., 535 Smithfield St., Pittsburgh
Delta Chemical Co., 2101 Washington Blvd., Baltimore
Dow Chemical Co., Midland, Mich.
E. I. du Pont de Nemours Co., Wilmington, Del.
Hercules Powder Co., Wilmington
Hooker Electrochemical Co., Niagara Falls, N. Y.
Kessler Chem. Corp., Philadelphia
Koppers Co., Koppers Bldg., Pittsburgh, Pa.
Neville Co., Pittsburgh
Pennsylvania Refining Co., Butler, Pa.
Pittsburgh Coal Carbonization Co., Oliver Bldg., Pittsburgh
Reilly Tar & Chemical Corp., Indianapolis
Sharples Solvents Corp., Phila.
Shell Union Oil Corp., 100 Bush St., San Francisco
Standard Alcohol Co., 26 Broadway, N. Y.
U. S. Industrial Chem. Co., 60 E. 42nd St., N. Y.
Velsicol Corp., 120 E. Pearson St., Chicago
Westvaco Chlorine Prods. Co., 405 Lexington Ave., N. Y.

SOLVENTS, PETROLEUM

American Mineral Spirits Co., 230 N. Michigan Ave., Chicago
Anderson-Prichard Oil Co., Oklahoma City, Okla.
Atlantic Refining Co., 260 S. Broad St., Philadelphia
Carbide & Carbon Chem. Corp., 30 E. 42nd St., N. Y.
Commerce Petroleum Co., 2923 Lock St., Chicago
Deep Rock Oil Corp., 155 N. Clark St., Chicago
E. I. du Pont de Nemours Co., Wilmington, Del.
Pennsylvania Refining Co., Butler, Pa.
Shell Oil Co., 50 W. 50th St,. N. Y.
Sinclair Refining Co., 630 5th Ave., N. Y.
Skelly Oil Corp., 605 W. 47th St., Kansas City, Mo.
L. Sonneborn Sons, 88 Lexington Ave., N. Y.
Standard Oil Co. (Calif.), 225 Bush St., San Francisco
Standard Oil Co., (Ind.), 910 S. Michigan Ave., Chicago
Standard Oil Co. (Ohio), Midland Bldg., Cleveland
Velsicol Corp., 120 E. Pearson St., Chicago

SOYA BEAN OIL

(see also Brokers and Dealers)

Balfour, Guthrie Co., 67 Wall St., N. Y.
Irving R. Boody & Co., 120 Wall St., N. Y.
E. F. Drew & Co., Wecoline Div., Boonton, N. J.
Eastern Industries, Inc., Ridgefield, N. J.
William O. Goodrich Co., Milwaukee, Wis.
W. R. Grace & Co., 7 Hanover Sq., N. Y.
Spencer Kellogg & Son, Buffalo, N. Y.
Pacific Vegetable Oil Co., 62 Townsend St., San Francisco
Procter & Gamble Co., Cincinnati
Purina Mills, St. Louis
Werner G. Smith Co., 2191 W. 110th St., Cleveland
A. E. Staley Mfg. Co., Decatur, Ill.
A. E. Starkie Co., 5461 W. Division St., Chicago
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

SPERMACETI

E. A. Bromund Co., 258 Broadway, N. Y.
A. C. Drury & Co., 210 E. Water St., Chicago
Innis, Speiden & Co., 117 Liberty St., N. Y.
Lenape Trading Co., 233 Broadway, N. Y.
George H. Lincks, 155 John St., N. Y.
Neumann-Buslee & Wolfe, 224 W. Huron St., Chicago
Orbis Products Corp., 215 Pearl St., N. Y.
S. B. Penick & Co., 50 Church St., N. Y.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
L. A. Salomon & Bro., 216 Pearl St., N. Y.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
Smith & Nichols, 121 Maiden Lane, N. Y.
Strohmeyer & Arpe Co., 139 Franklin St., N. Y.
Will & Baumer Candle Co., Syracuse, N. Y.

SPONGES (Natural and Synthetic)

Allied Industrial Prods. Co., 620 N. Michigan, Chicago
American Sponge & Chamois Co., 47 Ann St., N. Y.
American Standard Mfg. Co., 2509 S. Green St., Chicago
Atlas Sponge Co., 291 Church St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington
Florida Sponge & Chamois Co., 42 Cliff St., N. Y.
Great Eastern Sponge & Chamois Co., 833 N. Catt. Pk. Ave., Baltimore
James H. Rhodes & Co., 157 W. Hubbard St., Chicago
Robinson Sponge Co., 1805 Atlantic Ave., Brooklyn

SPOTTING FLUIDS (see CLEANING FLUIDS)

SPRAYERS, BOTTLE

Arnold-Copeland Co., 22 Elkins St., So. Boston, Mass.
Celluplaster Corp., 50 Avenue L, Newark, N. J.
Federal Tool Corp., 412 Leavitt St., Chicago
Wilco Co., 7016 McKinley Ave., Los Angeles

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BREUER ELECTRIC MFG. CO.

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CHICAGO 40, ILL.

SPRAYERS, COMPRESSED AIR

Acmeline Mfg. Co., Traverse City, Mich.
Binks Mfg. Co., 3114 Carroll Ave., Chicago
Breuer Electric Mfg. Co., 5120 N. Ravenswood Ave., Chicago
E. C. Brown Co., Rochester, N. Y.
DeVilbiss Co., Toledo, O.
Dobbins Mfg. Co., Elkhart, Ind.
Electric Sprayit Co., 1415 Illinois Ave., Sheboygan, Wis.
Fumeral Co., Racine, Wis.
Hudson Mfg. Co., 589 E. Illinois St., Chicago
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago
Lowell Mfg. Co., North Pier Terminal, Chicago
Miller-Simons, Inc., 2900 S. 61st Court, Chicago
Mystic Products Co., 417 No. 5th St., Minneapolis
Simmon Paint Spray Brush Co., Dayton, O.
Volume Sprayer Mfg. Co., Tulsa, Okla.

SPRAYERS, ELECTRIC

Acmeline Mfg. Co., Traverse City, Mich.
Binks Mfg. Co., 3114 Carroll Ave., Chicago
Breuer Electric Mfg. Co., 5120 N. Ravenswood Ave., Chicago
Dobbins Mfg. Co., Elkhart, Ind.
DuLa Mfg. Co., 351 Atlantic Ave., Brooklyn, N. Y.
Electric Sprayit Co., 1415 Illinois Ave., Sheboygan, Wis.
Fumeral Co., Racine, Wis.
Hudson Mfg. Co., 589 E. Illinois St., Chicago
Lowell Mfg. Co., North Pier Terminal, Chicago
Metal Specialties Mfg. Co., 3208 Carroll Ave., Chicago

SPRAYERS, ELECTRIC, STEAM

DuLa Mfg. Co., 351 Atlantic Ave., Brooklyn
Electric Sprayit Co., 1415 Illinois Ave., Sheboygan, Wis.
Fumeral Co., Racine, Wis.
Kaz Mfg. Co., 611 W. 43rd St., N. Y.
Lowell Mfg. Co., North Pier Terminal, Chicago
Mystic Products Co., 417 N. Fifth St., Minneapolis

SPRAYERS, HAND

Acmeline Mfg. Co., Traverse City, Mich.
R. E. Chapin Mfg. Works, Batavia, N. Y.
Continental Can Co., 100 E. 42nd St., N. Y.
Dobbins Mfg. Co., Elkhart, Ind.
Electric Sprayit Co., 1415 Illinois Ave., Sheboygan, Wis.
Hudson Mfg. Co., 589 E. Illinois St., Chicago
Jaeckh Mfg. Co., Cincinnati
Lowell Mfg. Co., North Pier Terminal, Chicago
D. B. Smith Co., Utica, N. Y.
Standard Container, Inc., Rockaway, N. J.
Universal Metal Prods. Co., Lowell, Mich.
Volume Sprayer Mfg. Co., Tulsa, Okla.
Wilco Co., 6800 McKinley Ave., Los Angeles

SPRAYERS, MOUTH

Acmeline Mfg. Co., Traverse City, Mich.
Arnold-Copeland Co., 22 Elkins St., So. Boston, Mass.
H. D. Hudson Mfg. Co., 589 E. Illinois St., Chicago
Lowell Mfg. Co., North Pier Terminal, Chicago
D. B. Smith & Co., Utica, N. Y.
Standard Container, Inc., Rockaway, N. J.

SPRAYERS, SODIUM HYPOCHLORITE

Fumeral Co., Racine, Wisc.

SPREADERS for INSECTICIDE (see CLAYS)

SQUEEGEES

Ardmore Mfg. Co., 5082 N. Lincoln Ave., Chicago
W. J. Dennis & Co., 1732 N. Kolmar, Chicago
A F. Dormeyer Mfg. Co., 4316 N. Kilpatk. St., Chicago
Aug. Hanke & Son Co., 6326 W. Guyer Ave., Chicago
Illinois Duster & Brush Co., 1944 Webster Ave., Chicago
J. Racenstein & Co., 621 Broadway, N. Y.
Reliance Hardward & Mfg. Co., 1438 N. Keating St., Chicago

SQUILLS (Rodent Poison)

Associated Chemists, Inc., 1906 N. Halsted Ave., Chicago
J. L. Hopkins & Co., 220 Broadway, N. Y.
McLaughlin Gormley King Co., 1715 5th St., S. E., Minneapolis, Minn.
S. B. Penick & Co., 50 Church St., N. Y.
R. J. Prentiss & Co., 80 John St., N. Y.
Ratin Laboratory, 116 Broad St., N. Y.
York Chem. Co., 424 W. 18th St., N Y

STANNOUS CHLORIDE (see TIN CRYSTALS)

STARCH

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Arabol Mfg. Co., 110 E. 42nd St., N. Y.
T. G. Cooper & Co., 47 N. 2nd St., Phila
A. C. Drury & Co., 219 E. N. Water St., Chicago
Innis, Speiden & Co., 117 Liberty St., N. Y.
Keever Starch Co., Columbus, O.
H. Kohnstamm & Co., 91 Park Pl., N. Y.
National Starch Prods., 270 Madison Ave., N. Y.
Orbis Products Corp., 215 Pearl St., N. Y.
L. A. Salomon & Bro., 216 Pearl St.
A. E. Staley Mfg. Co., Decatur, Ill.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

STEARATES (Zinc, Calcium, Magnesium, etc)

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Cuprinol Inc., 7 Water St., Boston
E. I. du Pont de Nemours Co., Wilmington, Del.
Franks Chem. Prods. Co., 55 33rd St., Brooklyn
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Hooker Electrochemical Co., Niagara Falls, N. Y.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Mallinckrodt Chem. Wks., St. Louis
Merck & Co., Rahway, N. J.
National Oil Products Co., Harrison, N. J.
M. W. Parsons, Inc., 59 Beekman St., N. Y.
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
Synthetic Products Co., London Rd. & Euclid Ave., Cleveland
Jos. Turner & Co., Ridgefield, N. J.
Whittaker, Clark & Daniels, 260 W. Broadway, N. Y.

STEARIC ACID

(see also Brokers and Dealers)

American British Chem. Supplies, Inc., 180 Madison Ave., N. Y.
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Celina Stearic Acid Co., Celina, Ohio
Century Stearic Acid Candle Wks., 41 E. 42nd St., N. Y.
Chemical Sales Corp., Pittsburgh, 19

STEARIC ACID (Contd.)

Darling & Co., 4201 S. Ashland Ave., Chicago
E. F. Drew & Co., Wecoline Div., Boonton, N. J.
Eastern Industries, Inc., Ridgefield, N. J.
Emery Industries, Inc., 4300 Carew Tower, Cincinnati
A. Gross & Co., 295 Madison Ave., N. Y.
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Harkness & Cowing, Ivorydale, Cincinnati
Innis, Speiden & Co., 17 Liberty St., N. Y.
National Oil Products Co., Harrison, N. J.
Orbis Products Corp., 215 Pearl St., N. Y.
Procter & Gamble Co., Cincinnati
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
E. M. Sergeant Pulp & Chem. Co., Empire State Bldg., N. Y.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
A. E. Starkie, 5461 W. Division St., Chicago
Theobald Industries, Kearny, N. J.
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.
M. Werk Co., St. Bernard, Cincinnati
Will & Baumer Candle Co., Syracuse, N. Y.
Wilson-Martin Co., Snyder Ave. & Swanson St., Phila.
Witco Chemical Co., 295 Madison Ave., N. Y.

STEARINE

(see also Brokers and Dealers)

Celina Stearic Acid Co., Celina, Ohio
Darling & Co., 4201 S. Ashland Ave., Chicago
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
Emery Industries, Inc., 4300 Carew Tower, Cincinnati
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Independent Mfg. Co., Bridesburg P. O., Phila.
Morris Co., Union Stock Yards, Chicago
Pacific Vegetable Oil Corp., 62 Townsend St., San Francisco
Procter & Gamble Co., Cincinnati
Werner G. Smith Co., 2191 W. 110th St., Cleveland
A. E. Starkie, 5461 W. Division St., Chicago
Louis Stern Sons., Inc., Produce Exch., N. Y.
Swift & Co., Union Stock Yards., Chicago
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.
Wilson & Co., 4100 Ashland Ave., Chicago

STEARINE PITCH

Allied Asphalt & Mineral Corp., 217 Broadway, N. Y.
Armour & Co., 1355 W. 31st St., Chicago
Darling & Co., 4201 S. Ashland Ave., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
Emery Industries, Inc., 4300 Carew Tower, Cincinnati
A. Gross & Co., 295 Madison Ave., N. Y.
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Procter & Gamble Co., Ivorydale, O.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
A. E. Starkie, 5461 W. Division St., Chicago
Wilson & Co., 4100 Ashland Ave., Chicago

STEEL DRUMS (see DRUMS, STEEL)

STEEL PAILS (see PAILS, STEEL)

STEEL, NICKEL CLAD

Illinois Steel Co., 208 S. La Salle St., Chicago
International Nickel Co., 67 Wall St., N. Y.
Lukens Steel Co., Coatesville, Pa.
Republic Steel Corp., Republic Bldg., Cleveland, O.

STEEL TANKS (see TANKS, STEEL)

STEEL WOOL

American Steel Wool Mfg. Co., 42-24 Orchard St., L. I. City, N. Y.
International Steel Wool Co., Springfield, Ohio
James H. Rhodes & Co., 157 W. Hubbard St., Chicago

STODDARD'S SOLVENT (see SOLVENTS, PETROLEUM)

STORAGE TANKS (see TANKS, STORAGE, etc.)

SUDSING EQUIPMENT (see SOAP SOLUTIONIZING DEVICE)

SULFATED FATTY ALCOHOLS (and other Non-Soap Organic Detergents, and Derivatives)

Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N. Y.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
E. I. du Pont de Nemours Co., Wilmington, Del.
General Dyestuffs Corp., 435 Hudson St., N. Y.
Hummel Chemical Co., 90 West St., N. Y.
N. I. Malmstrom & Co., 147 Lombardy St., Brooklyn
Michel Export Co., 90 Broad St., N. Y.
National Aniline & Chem. Div., 40 Rector St., N. Y.
National Oil Products Co., Harrison, N. J.
Procter & Gamble Co., Cincinnati
Richards Sales Corp., Jersey City, N. J.
Sandoz Chemical Works, 61 Van Dam St., N. Y.
Jacques Wolfe & Co., Passaic, N. J.

SULFONATED OILS

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Atlantic Refining Co., 260 S. Broad St., Phila.
Colloids, Inc., 395 Frelinghuysen Ave., Newark, N. J.
E. F. Drew & Co., Wecoline Div., Boonton, N. J.
Eastern Industries, Inc., Ridgefield, N. J.
Emery Industries, 4300 Carew Tower, Cincinnati
Hercules Powder Co., Wilmington
Kali Mfg. Co., 1408 N. Front St., Philadelphia
National Oil Products Co., Harrison, N. J.
Richards Sales Corp., Jersey City, N. J.
Sandoz Chemical Works, 61 Van Dam St., N. Y.
L. Sonneborn Sons, Inc., 8 Lexington Ave., N. Y.
A. E. Starkie, 5461 W. Division St., Chicago
Arthur C. Trask Co., 4103 S. La Salle St., Chicago
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.
Jacques Wolfe & Co., Passaic, N. J.

SULFOXYLATES (Soap Bleaches)

Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila.
Jacques Wolfe & Co., Passaic, N. J.

SULFUR CANDLES

Koppers Co., White Tar Div., Kerny, N. J.
Reliable Chemical Co., Passaic, N. J.

SUPERFATTING AGENTS (for Toilet Soaps)

N. I. Malmstrom Co., 147 Lombardy St., Bklyn.
National Oil Products Co., Harrison, N. J.
Pfaltz & Bauer, 350 5th Ave., N. Y.
Pylam Products Co., 799 Greenwich St., N. Y.
Richards Sales Corp., Jersey City, N. J.
Welch, Holme & Clark Co., Inc., 563 Greenwich St., N. Y.

SUPERHEATERS

Eureka Machine Co., 2601 Vega Ave., Cleveland
Ernest Scott & Co., Fall River, Mass.
The Superheater Co., 60 E. 42nd St., N. Y.

SURGICAL SOAPS (see POTASH SOAPS)

SWEEPING COMPOUNDS

A-1 Floor Sweep Co., 1923 N. Haskell, Dallas
American Excelsior Corp., 1000 N. Halstead St., Chicago
American Soap & Washoline Co., Cohoes, N. Y.
Banner Chemical Prod. Corp., 329 Mulberry St., Newark, N. J.
Baums Castorine Co., 200 Matthews St., Rome, N. Y.
Philip Carey Mfg. Co., Lockland, Cincinnati
Champion Mfg. Co., 322 S. Erie St., Indianapolis, Ind.
Chicago Sanitary Prods. Co., 3100 S. Throop St., Chicago
Creco Co., Inc., Creco Bldg., Long Island City, N. Y.
Filtrol Corp., 634 S. Spring St., Los Angeles
Fitch Dustdown Co., 801 S. Howard St., Baltimore
Fuld Bros., 702 S. Wolfe St., Baltimore
Higley Chemical Co., Dubuque, Iowa
Hockwald Chem. Co., 135 Mississippi St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hysan Products Co., 58 E. Cullerton St., Chicago
Frank Miller & Sons, 2240 W. 58th St., Chicago
North Coast Soap & Chem. Wks., Seattle, Wash.
Pacific Chem. Co., 1421 N. Main St., Los Angeles
Palmer Products, Inc., Waukesha, Wisc.
Peck's Prods. Co., 5238 N. Second St., St. Louis
Pioneer Mfg. Co., Cleveland, O.
Port Huron Detergent Co., Port Huron, Mich.
Puritan Chem. Co., 209 Peters St., N. W. Atlanta
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Rochester Germicide Co., Rochester, N. Y.
Sanco Prods, Inc., Greenville, O.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Jno. C. F. Snyder & Sons, Inc., 2304 N. 28th St., Phila.
Solshine Mfg. Co., 412—2nd St., Fall River, Mass.
Sweeping Compound Mnfrs. Co., 421 Broome St., N. Y.
Tesco Chem. Co., P. O. Box 4748, Atlanta
Uncle Sam Chemical Co., 329 E. 29th St., N. Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

SYNTHETIC DETERGENTS (see DETERGENTS, SYNTHETIC)

SYNTHETIC INSECTICIDE CONCENTRATES (see INSECTICIDE CONCENTRATES, SYNTHETIC)

SYNTHETIC WAXES (see WAXES, SYNTHETIC)

TALC

American Cyanamid & Chem. Corp., 30 Rockefeller, Plaza, N. Y.
Binney & Smith Co., 41 E. 42nd St., N. Y.
Blue Ridge Talc Co., Henry, Va.
Chas. B. Chrystal Co., 16 Hudson, N. Y.
A. C. Drury & Co., 219 East North Water St., Chicago
E. I. du Pont de Nemours Co., Wilmington, Del.
Eastern Magnesia Talc Co., Burlington, Vt.
Enco Chem. Corp., 441 Lexington Ave., N. Y.
Fezandie & Sperrle, 205 Fulton St., N. Y.
Georgia Talc Co., Asheville, N. C.
Goris & Arnstein, 37th & Racine Ave., Chicago
K. F. Griffiths & Co., 110 E. 42nd St., N. Y.
Hammill & Gillespie, 225 Broadway, N. Y.
Hercules Powder Co., Wilmington, Del.
Innis, Speiden & Co., 117 Liberty St., N. Y.
Los Angeles Talc Co., Los Angeles, Cal.
Natura Minerals Co., 108 W. 6th St., Los Angeles
Orbis Products Corp., 215 Pearl St., N. Y.
Pacific Coast Talc Co., Los Angeles, Cal.
R. F. Revson Co., 144 W. 18th St., N. Y.
James H. Rhodes & Co., 157 W. Hubbard St., Chicago
H. H. Rosenthal Co., 25 E. 26th St., N. Y.
L. A. Salomon & Bro., 216 Pearl St., N. Y.
A. E. Starkie, 5461 W. Division St., Chicago
Tamms Silica Co., 228 N. La Salle St., Chicago
Union Talc Co., 147 Nassau St., N. Y.
R. T. Vanderbilt Co., 230 Park Ave., N. Y.
Welch, Holme & Clark Co., Inc., 563 Greenwich St., N. Y.
Whittaker, Clark & Daniels, 260 W. Broadway, N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.
Wyodak Chemical Co., 4600 E. 71st St., Cleveland

TALL OIL (TALLOL)

Champion Paper & Fibre Co., Canton, North Carolina
Industrial Chem. Sales Div., West Va. Pulp & Paper Co. 230 Park Ave., N. Y.
Chas. L. Read & Co., 120 Greenwich St., N. Y.
Saltcake Sales Corp., 230 Park Ave., N. Y.
Union Bag & Paper Corp., 233 Bdway, New York
Welch, Holme & Clark Co., 563 Greenwich St., N. Y.

TALLOW

(see also Brokers and Dealers)

Armour & Co., 1355 W. 31st St., Chicago
Belleville Rendering Co., Belleville, Ill.
Consolidated Rendering Co., 178 Atlantic Ave., Boston
Cudahy Packing Co., 111 W. Monroe St., Chicago
Darling & Co., 4201 S. Ashland Ave., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
Otto A. C. Hagen Corp., Public Ledger Bldg., Phila.
Hercules Powder Co., Wilmington
Independent Mfg. Co., Bridesburg P. O., Phila.
Long Island Soap Co., 29 Bridgewater St., Brooklyn
Louisville Butchers' Hide & Tallow Co., Louisville, Ky.
Newman Tallow & Soap Mach. Co., 1051 W. 35th, Chicago
Willibald Schaefer Co., Foot of Bremen Ave., St. Louis
Werner G. Smith Co., 2191 W. 110th St., Cleveland
Swift & Co., Union Stock Yards, Chicago
Theobald Industries, Kearny, N. J.
Toledo Tallow Co., Toledo, Ohio
Waltham Tallow Co., Waltham, Mass.
Wayne Soap Co., Detroit
Welch, Holme & Clark Co., Inc., 563 Greenwich St., N. Y.
Wilson & Co., Union Stock Yards, Chicago
Wilson-Martin Co., Swanson St., Phila.

TALLOW CHIP SOAP (see CHIP SOAPS)

TALLOW OIL

(see also Brokers and Dealers)

Armour & Co., 1355 W. 31st St., Chicago
Consolidated Rendering Co., 40 N. Market St., Boston
Cudahy Packing Co., 111 W. Monroe St., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
W. C. Hardesty Co., 41 E. 42nd St., N. Y.
Independent Mfg. Co., Bridesburg, P. O., Phila
Swift & Co., Union Stock Yards, Chicago
Toledo Tallow Co., Toledo, Ohio
Waltham Tallow Co., Waltham, Mass.
Welch, Holme & Clark Co., Inc., 563 Greenwich St., N. Y.
West Coast Fert. & Rendering Co., Los Angeles
Wilson & Co., Union Stock Yards, Chicago

TANKS (Glass Lined Mixing and Storage)

Alsop Engineering Corp., 100 High St., Milldale, Conn.
Consolidated Products Co., 15 Park Row, N. Y. (Used)
Edge Moor Iron Wks., 30 Rockefeller Plaza, N. Y.

TANKS (Glass Lined Mixing and Storage) (Contd.)

Ertel Engineering Co., Kingston, N. Y.
Filter Paper Co., 57 E. 24th St., Chicago
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
Littleford Bros., 453 E. Pearl St., Cincinnati
Metal Glass Products Corp., Belding, Mich.
Mixing Equipment Co., 1067 Garson Ave., Rochester
Newman Tallow & Soap Mach. Co., 1051 W. 35th, Chicago
Pfaudler Co., 89 East Ave., Rochester, N. Y.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Scientific Filter Co., 1 Franklin Sq., N. Y.
Sprout, Waldron & Co., Muncy, Pa.
Stein Equipment Corp., 426 Broome St., N. Y. (Used)

TANKS (for Liquid Soap Dispensing Systems)

Ampion Corp., 4-88—Forty-seventh Ave., L. I. City, N. Y.
Antiseptol Co., 5524 Northwest Highway, Chicago
Bobrick Mfg. Corp., 2619 Santa Fe Ave., Los Angeles
Brighton Copper Works, 2163 Western Ave., Cincinnati
Clifton Chemical Co., 247 Front St., N. Y.
Eagle Soap Corp., Huntington, Ind.
Fuld Bros., Inc., 702 S. Wolfe St., Baltimore
R. M. Hollingshead Corp., Camden, N. J.
Imperial Brass Mfg Co., 1200 W. Harrison St., Chicago
Palmer Products, Inc., Waukesha, Wisc.
Rochester Germicide Co., Rochester, N. Y.
John Trageser Steam Copper Works, Grand Ave., Maspeth, L. I., N. Y.
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
West Disinfecting Co., Long Island City, N. Y.

TANKS (Steel Mixing and Storage)

Alloy Prods. Corp., 221 Madison St., Waukesha, Wis.
Alsop Engineering Corp., 100 High St., Milldale, Conn.
S. F. Bowser & Co., Ft. Wayne, Ind.
Consolidated Prods. Co., 15 Park Row, N. Y. (Used)
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Edge Moor Iron Wks., 30 Rockefeller Plaza, N. Y.
Filter Paper Co., 57 E. 24th St., Chicago
First Machy. Corp., 819 E. 9th St., N. Y. (Used)
William Garrigue & Co., 9 S. Clinton St., Chicago
General American Transportation Corp., 135 S. LaSalle St., Chicago
Graver Tank & Mfg. Corp., 332 S. Michigan, Chicago
Houchin Machinery Co., Hawthorne, N. J.
Huber Machine Co., 259—46th St., Brooklyn
Illinois Steel Corp., 208 S. LaSalle St., Chicago
Lancaster Iron Works, 564 S. Prince St., Lancaster, Pa.
J. M. Lehmann Co., Lyndhurst, N. J.
Littleford Bros., 453 E. Pearl St., Cincinnati
Lukens Steel Corp., Coatesville, Pa.
Mixing Equipment Co., 1067 Garson Ave., Rochester
Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago (Used)
Patterson Foundry & Machine Co., East Liverpool, Ohio
Petroleum Iron Works, Sharon, Pa.
Pfaudler Co., Rochester, N. Y.
Pioneer Tank & Boiler Co., Tulsa, Okla.
H. K. Porter Co., 49th & Harrison Sts., Pittsburgh
Read Machy Co., York, Pa.
Sprout, Waldron & Co., Muncy, Pa.
Stein Equipment Corp., 426 Broome St., N. Y. (Used)
Struthers-Wells-Titusville Corp., Warren, Pa.
John Trageser Steam Copper Works, Grand St., Maspeth, L. I., N. Y.

TANKS (Wooden Mixing and Storage)

Atlantic Tank & Barrel Co., North Bergen, N. J.
J. H. Day Co., 1144 Harrison Ave., Cincinnati
General Tank Corp., 30 Church St., N. Y.
Hauser-Stander Tank Co., Ivorydale, Cinn.
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James Huggins & Son, 239 Medford St., Malden, Mass.
Wm. E. Jordan & Bro., 2590 Atlantic Ave., Brooklyn
Koppers Co., Koppers Bldg., Pittsburgh, Pa.
Monsanto Chemical Co., St. Louis
Neville Co., Pittsburgh
Reilly Tar & Chem. Co., Indianapolis
Shell Oil Co., 50 W. 50th St., N. Y.

TERPENELESS OILS (see ESSENTIAL OILS)

TERPENYL ACETATE (see AROMATIC CHEMICALS)

TERPINEOL

(see also Essential Oils)

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Aromatic Products, Inc., 15 E. 30th St., N. Y.
Crosby Naval Stores, Inc., Picayune, Miss.
Dodge & Olcott Co., 180 Varick St., N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del.
Felton Chemical Co., 603 Johnson Ave., Brooklyn, N. Y.
Firmenich & Co., 135—5th Ave., N. Y.
General Drug Co., 644 Pacific St., Bklyn.
Givaudan-Delawanna, Inc., 330 W. 42nd St., N. Y.
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Magnus, Mabee & Reynard, 16 Desbrosses St., N. Y.
Schimmel & Co., 601 W. 26th St., N. Y.
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General Chemical Co., 40 Rector St., N. Y.
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Monsanto Chemical Co., St. Louis
Philipp Bros., 70 Pine St., N. Y.
Rumford Chem. Wks., Providence, R. I.
Victor Chem. Wks., 141 W. Jackson Blvd., Chicago
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H. Kohnstamm & Co., 91 Park Pl., N. Y.
Laurel Soap Mfg. Co., Tioga St., Phila.
Long Island Soap Co., Meeker Ave. & Bridgewater St., Brooklyn, N. Y.
Los Angeles Soap Co., Los Angeles, Cal.
Geo. E. Marsh Co., 200 Broadway, Cambridge, Mass.
National Oil Products Co., Harrison, N. J.
National Soap Co., 357 South 26th St., Tacoma, Wash.
Newell Gutradt & Co., 350 Fremont St., San Francisco
Peck's Prods. Co., 5240 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
Puritan Soap Co., 573 Lyell Ave., Rochester, N. Y.
Rome Soap Mfg. Co., Rome, N. Y.
Sandoz Chemical Works, 61 Van Dam St., N. Y.
Sanitary Soap Co., 104 Railroad Ave., Paterson, N. J.
Scholler Bros., 3301 Amber St., Philadelphia
Geo. E. Sherman Co., 153 Classon Ave., Brooklyn, N. Y.
L. Sonneborn Sons, Inc., 88 Lexington Ave., N. Y.
John T. Stanley Co., 642 W. 30th St., N. Y.
Superior Soap Corp., 121 Nostrand Ave., Brooklyn
Swift & Co., Union Stock Yards, Chicago
Ultra Chem. Wks., Inc., Paterson, N. J.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
M. Werk Co., St. Bernard, Cincinnati
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E. I. du Pont de Nemours Co., Wilmington, Del.
Emery Industries, Inc., Carew Tower, Cincinnati
Enterprise Mill Soap Wks., 2231 N. 12th St., Philadelphia
Franklin Research Co., 5134 Lancaster Ave., Phila.
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Arnold Hoffman & Co., Providence, R. I.
Laurel Soap Mfg. Co., Tioga St., Phila., Pa.
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Napthole, Inc., 15 E. 26th St., N. Y.
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National Starch Prods. Co., 820 Greenwich St., N. Y.
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Ultra Chem. Works, Inc., Kitay Bldg., Paterson, N. J.
Washine-National-Sands, Inc., 37-02 Northern Blvd., Long Island City
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Fuld Bros., 702 S. Wolfe St., Baltimore
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Higley Chemical Co., Dubuque, Iowa
Hockwald Chemical Co., 135 Mississippi St., San Francisco
Hunt Mfg. Co., Lisbon Rd., Cleveland
Hysan Prods. Co., 58 E. Cullerton St., Chicago
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
Lewis Soap & Chem. Co., Oakland, Cal.
Midland Labs., Dubuque, Iowa
Palmer Products, Inc., Waukesha, Wisc.
Peck's Prods. Co., St. Louis
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Rochester Sanitary Prods. Co., 874 Seward St., Rochester, N. Y.
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Tesco Chem. Co., P. O. Box 4748, Atlanta
J. A. Tumbler Labs., 423 Hanover St., Hanover
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Titanium Pigment Co., 111 Broadway, N. Y.
R. T. Vanderbilt Co., 230 Park Ave., N. Y.
Witco Chemical Co., 295 Madison Ave., N. Y.

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Victoria Paper Mills Co., Fulton, N. Y.

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Richards Sales Corp., Warren & Morris Sts., Jersey City, N. J.
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
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John T. Stanley Co., 642 W. 30th St., N. Y.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

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Peck's Products, 5240 N. 2nd St., St. Louis
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Swift & Co., Chicago
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Cudahy Packing Co., 221 N. LaSalle St., Chicago
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Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
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National Soap Co., Box 1613, Tacoma, Wash.
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North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Products, 5240 N. 2nd St., St. Louis
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Peerless Tube Co., Bloomfield, N. J.
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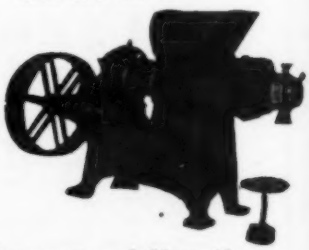

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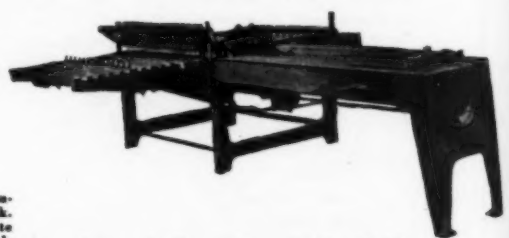

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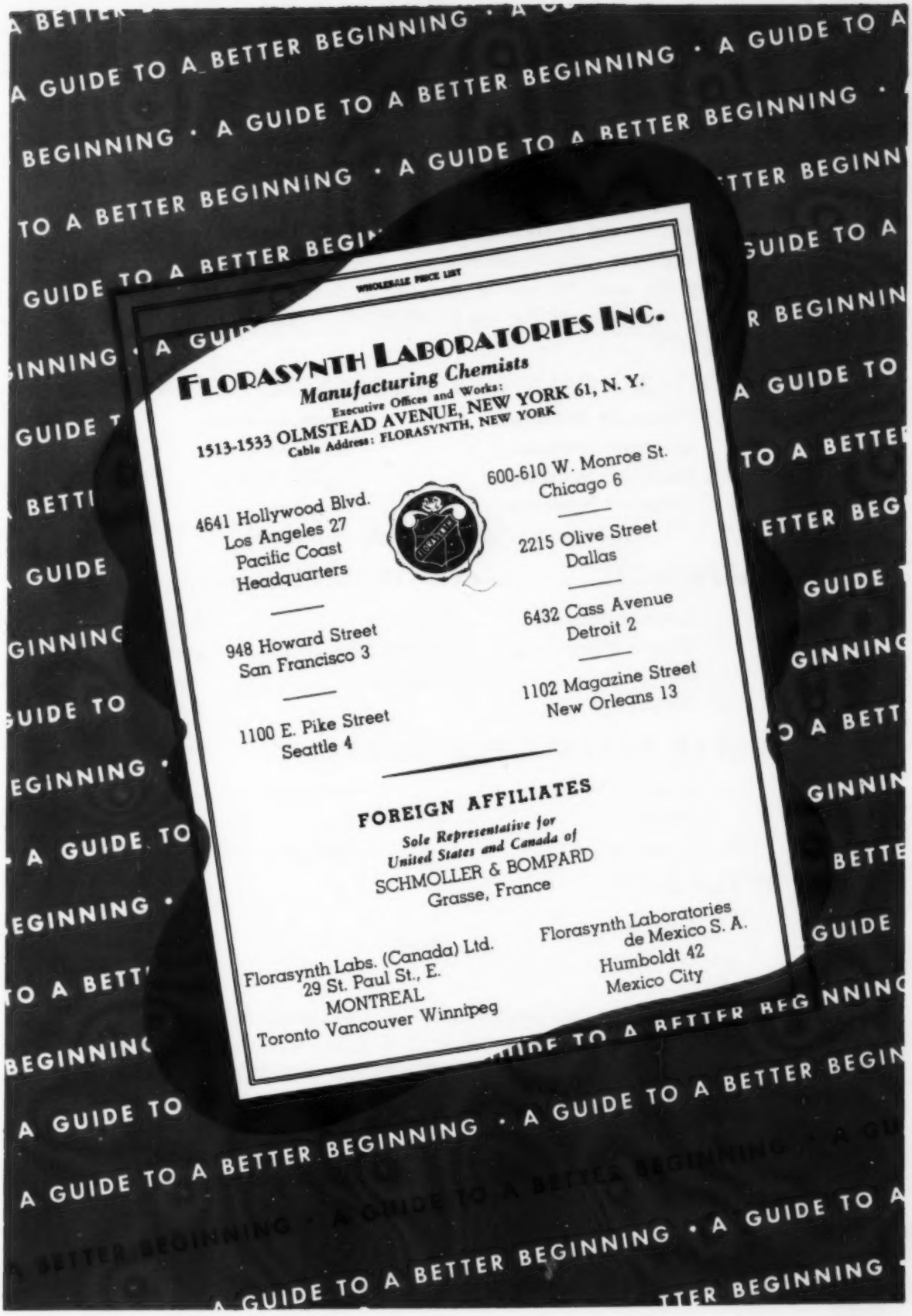
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RAW MATERIALS *for the* SOAP INDUSTRY

1838-1944

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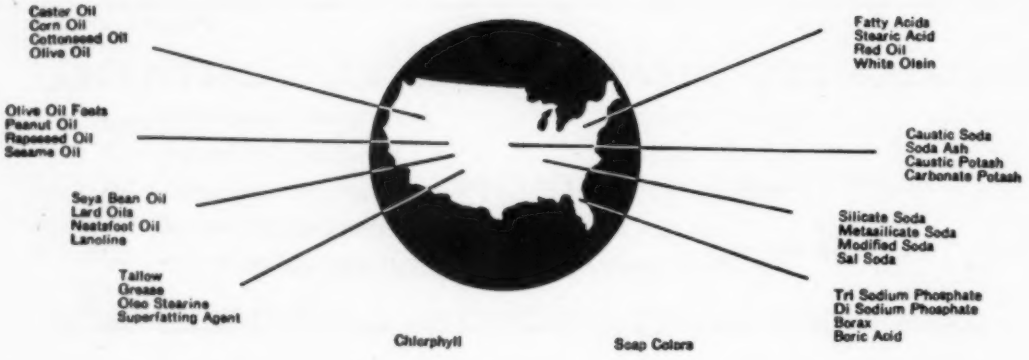

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1943 Soap Fat and Oil Use

CONSUMPTION of primary fats and oils by the soap industry dropped approximately nine per cent in 1943 from the 1942 level, the 1943 figure being in the neighborhood of 1,703,994,000 lbs., based on a preliminary and unofficial tabulation of Census figures, as compared with 1,871,039,000 lbs. in 1942. Even more of a decline is evident in comparison with the record year of 1941, when 2,143,857,000 lbs. of fats and oils went to the soap kettle. The above figures, incidentally, are for primary vegetable and animal fats and oils, only, and do not reflect consumption of foots and fatty acids.

The drop in consumption of soap fats during 1943 was traceable directly to lowered availability of tallow. Consumption of tallow in the soap kettle fell off over 300,000,000 lbs. during 1943 as compared with 1942 figures. This was only partially compensated for by an increase in supplies of grease. The fat salvage program was no doubt largely responsible for the increased supply of grease that went into soap in 1943,—463,000,000 lbs. as against 338,000,000 lbs. in the previous year.

Another important change in the soap kettle charge for 1943 was the appearance of 74,039,000 lbs. of lard in the column of soap fats. Because of the shortage of tallow it was necessary to divert to soap making purposes this substantial quantity of an edible fat which, particularly over the closing months of the year, was available in excess supply. Of the soap industry's 1943 consumption of lard, 56,000,000 lbs. were taken in the fourth quarter, and the balance in the third quarter.

The soap industry fared a little better in 1943 than it did in the previous year so far as supplies of high lauric acid containing oils go. Soap makers were given 142,346,000 lbs. of coconut oil in 1943 as against 140,487,000 lbs. the previous year. Their share of the 1943 babassu oil imports was 25,814,000 lbs., as against 19,105,000 lbs. in the previous year. Reduced to percentages, in 1943 coconut and babassu oils aggregated 9.8 per cent of all fats and oils used by soap makers, while during 1942 they amounted to only 8.5 per cent of the kettle charge. Previous to 1942, of course, use of coconut oil in soap making had run in the neighborhood of 400,000,000 lbs. a year, and high lauric acid containing oils had regularly constituted from twenty to twenty-five per cent of the soap fat total.

Other changes in the trend of fat and oil use by soap makers worthy of note during the 1943 period were the declines registered in use of soybean, palm, whale and fish oils. Soybean use was cut in half in 1943, totaling only about fifteen million pounds for the year. Palm oil use dropped from fifty-five million pounds in 1942 to thirty-two million pounds in 1943. Use of marine oils declined from twenty-two million pounds in 1942 to practically nothing this past year, while fish oil use declined from fifty million pounds in '42 to forty-four million pounds in '43. Despite all the talk of increased use of linseed oil by soap makers, 1943 figures indicate that only a million and a half pounds of linseed oil found their way to the soap kettle last year, as compared with four million pounds in 1942.

FACTORY CONSUMPTION OF ANIMAL AND VEGETABLE FATS AND OILS IN THE MANUFACTURE OF SOAP

Source: U. S. Department of Commerce, Bureau of the Census

(Quantities in thousands of pounds)

KIND	1938	1939	1940	1941	1942	1943 (Preliminary)
Cotton oil .	2,883	1,061	2,971	3,010	2,863	991
Peanut oil.	545	805	387	597	485	256
Coconut oil	342,982	388,912	398,857	484,124	140,487	142,346
Corn oil ...	2,514	4,441	3,638	4,948	4,102	833
Soybean oil	10,897	11,177	17,612	24,737	31,510	15,428
Olive edible	31	54	130	84	27	11
Olive ined..	1,299	1,439	1,637	555	365	499
Olive foots.	15,013	19,068	14,948	10,029	4,823	4,987
Palm oil ..	91,642	102,146	84,934	129,871	55,865	32,621
Palm kernel	29,498	3,657	197	1,113	1,028	1,840
Rapeseed oil	55	2	49	5	....	1
Linseed oil	1,455	1,780	1,489	2,278	4,019	1,697
Tung oil ..	....	....	....	....	....	....
Perilla oil .	....	1	....	....	....	....
Castor oil .	1,810	946	1,225	1,976	7,949	1,091
Sesame oil.	302	14	38	304	189	65
Babassu oil	8,289	37,633	41,221	29,753	19,105	25,814
Other veg..	14,031	7,364	2,051	1,162	2,487	675
Lard	1	50	645	89	96	74,039
Stearin	240	278	549	70	483	275
Oleo oil ...	119	67	127	189	205	2,160
Tallow, ed..	332	418	657	4,826	634	4,652
Tallow ined.	702,267	785,041	786,456	1,057,303	1,188,923	884,862
Grease	96,356	120,856	256,886	310,487	338,974	463,811
Neat's foot.	20	11	19	35	19	68
Marine oils	66,080	51,522	19,250	6,889	21,989	284
Fish oils ..	79,874	114,961	88,661	69,423	50,412	44,688
Total	1,468,535	1,653,704	1,722,634	2,143,857	1,871,039	1,703,994
Foots	235,562	177,221	147,072	188,651	89,010*	
	1,704,097	1,830,925	1,869,706	2,332,508	1,960,049	

* Figures for last two quarters 1942 not given.

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Soap Sales Statistics

SOAP sales reached a new dollar peak in 1943, according to figures tabulated by the Association of American Soap and Glycerine Producers, although on a poundage basis 1943 sales were still approximately ten per cent under the record year of 1941. Total sales for the year, 1943, were 2,826,638,568 lbs., valued at $370,285,340. This compares with 3,138,260,597 lbs., worth $323,841,987 in 1941, and 2,929,582,158 lbs., worth $361,360,341 in 1942.

In addition to the above, there was a reported sale during 1943 by 41 manufacturers of 4,069,178 gallons of liquid soap, worth $3,818,866. The above figures compare with reported sales for 1942 of 2,952,507 gallons of liquid soap valued at $2,996,880, and for 1941 of 3,549,951 gallons valued at $2,577,315.

The above figures are admittedly not a complete report of the entire industry, and represent only the totals of some 75 reporting members of the Association of American Soap and Glycerine Producers. They reflect perhaps 80% of the total hard soap production, and what is believed to be a smaller percentage of liquid soap output.

Soap sales for 1943 reached their highest peak in the fourth quarter. Fourth quarter 1943 tonnage for hard soaps was 757,871,893 lbs., which has been exceeded in only four previous quarters, the peak figure being the 895,000,000 lbs. of soap sold in the record first quarter of 1942. The dollar value of fourth quarter 1943 sales was $101,607,231, this figure having ben topped only once before—by the $106,000,000 total for the first quarter of 1942. On a tonnage basis, 1943 fourth quarter sales figured 10% above the comparable 1942 figure and 20% over the average for the five year period, 1935-1939. Dollar volume for the fourth quarter of 1943 was 20% above 1942 fourth quarter dollars, and 70% above the average quarterly dollar figure for the five years, 1935-1939.

The impressive figures on 1943 soap sales continue the general upward trend that has been evident ever since 1935. Sales during 1943 of 2,826,000,000 lbs. of soap compare with 2,303,000,000 lbs. for 1935. The increase is approximately 23% over the eight year period. The increase in dollar value of the soap industry's output is even more striking in view of the higher prices that have followed increased cost of raw materials. The $370,000,000 value of 1943 sales contrasts with a figure of $200,000,000 for 1935 sales, the increase over the eight-year period amounting to 85%.

SOAP SALES 1936-1943

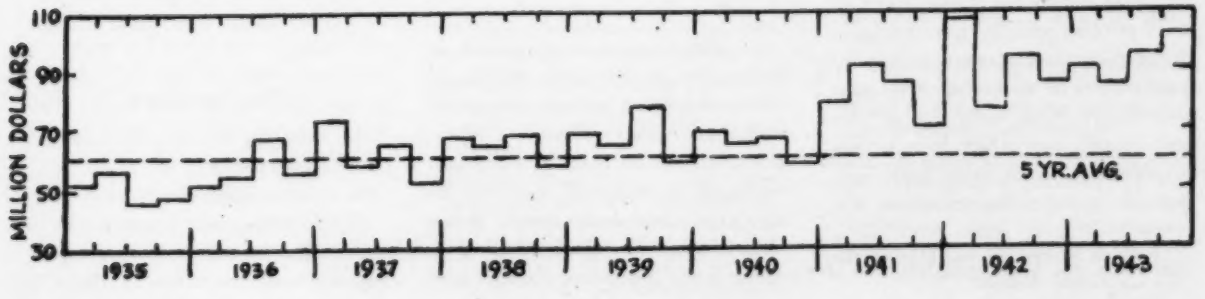
	1936	1937	1938	1939
First Quarter	$51,269,716	$72,582,304	$67,112,812	$68,326,726
Second Quarter	54,363,429	58,336,914	64,310,589	64,718,586
Third Quarter	67,680,378	65,120,330	67,873,625	77,780,866
Fourth Quarter	55,298,767	52,585,001	57,371,041	59,055,577
Total	$228,612,290	$248,624,549	$256,668,067	$269,881,755

	1940	1941	1942	1943
First Quarter	$69,134,008	$79,276,466	$107,380,552	$91,062,989
Second Quarter	65,423,287	90,613,189	76,300,141	84,980,008
Third Quarter	66,177,043	85,902,528	94,607,925	95,086,998
Fourth Quarter	58,466,523	70,294,813	85,733,639	102,497,657
Total	$259,200,861	$326,086,996	$364,022,257	$373,627,652

SALES IN POUNDS

	1940	1941	1942	1943
First Quarter	682,788,527	819,225,814	895,927,565	714,390,069
Second Quarter	644,780,955	890,127,744	601,776,330	654,830,397
Third Quarter	689,609,500	803,762,353	744,500,978	699,546,209
Fourth Quarter	629,069,198	625,144,686	687,377,285	757,871,893
Total	2,646,248,180	3,138,260,597	2,929,582,158	2,826,638,568

Above figures include only comparable totals of reporting members of Assn. American Soap & Glycerine Producers



Use of Rosin in Soap*

USE of rosin in soap is not new. For many years this plentiful material from our Southern pines has been a standard ingredient in soap of certain grades.

No one would advocate the production and use of a 100 per cent rosin soap for general household use. But there is evidence enough to indicate the value of rosin as a soap ingredient when it is used properly and in reasonable proportions relative to other soap stocks.

The percentage rosin in the total saponifiables put into production by American soap makers has varied between 9.6 per cent in 1922 and 4.2 per cent in 1940. The ratio of rosin in proportion to the total saponifiables has tended to decrease through the years because of the general belief that rosin could not be used in chip and powdered soaps, the volume of which has been increasing in recent years. Use of rosin in soap, furthermore, has been proportionate to fat prices. When fat prices were high and those of rosin low in comparison, more rosin was used. When fat prices were low, less rosin has normally been used.

Use of rosin in soap in the United States during past years has been confined largely to brown bar laundry soap. It is reported, however, that as high as 5 per cent rosin in toilet soap has long been common practice in Europe and by certain American soap makers. It is claimed by some soap makers that the presence of rosin in soap acts as both a perfume fixative and a stabilizer against rancidity, in addition to being a good soap ingredient.

In the United States, use of up to 30 per cent rosin in brown bar laundry soap is common practice. But apparent fear of darkening and other reasons have kept rosin out of chip and sprayed soaps which have become so popular in recent years. Such fears, however, appear to be unjustified. Recent research findings indicate that the paler grades of rosin may be used in flaked and sprayed soaps in amounts up to 10 to 15 per cent without causing any appreciable darkening in these soaps.

In bar soaps the presence of rosin causes darkening in direct ratio to the grade of rosin used and the relative amount present. When pale rosins are used and amounts added are relatively small (up to 5 per cent), little increase in color need occur. Where the pale rosins are used with brown fats and oils, color contributed by the rosin, in amounts up to as high as 15 to 20 per cent, is hardly noticeable.

Another important factor today is the availability of improved rosins, such as hydrogenated and polymerized rosins, which exhibit improvements over the normal grades of rosin available in the past. A brief resumé of rosin chemistry at this point will be helpful in better visualizing the part which rosin and these improved rosins can play in helping to relieve the shortages of fats and oils normally used in soap making.

Rosin is composed of approximately 90 per cent rosin acids and 10 per cent esters, hydrocarbons, and other non-acid constituents. The acid portion is composed of abietic, l-pimaric, d-pimaric, and other rosin acids. All these acids are isomeric, monobasic, and have a molecular weight of 302.34 ($C_{20}H_{30}O_2$). The relative proportions of the different isomeric acids in any given sample of rosin vary with the source and past history of the sample. N wood rosin, for example, contains 35 to 40 per cent abietic acid.

Abietic acid is represented as having two double bonds which are subject to addition, isomerization, polymerization, and other chemical changes. The tendency of rosin to cause discoloration is associated with the reactivity of these double bonds. Better control over the reactivity of these double bonds is exercised through some of the newer rosin derivatives now available. Their use in soap is not attended by the color stability complications commonly associated with the use of untreated rosin.

Although the color of polymerized rosin is not quite as good as that of hydrogenated rosin, the former is characterized by another improvement of interest to the soap maker. The melting point of polymerized rosin is some 15 to 20° C. higher than those of gum and wood rosins, and thus enables the soap maker to exercise easier control over the titer of his soap. The improvement in resistance to oxidation shown by these chemically processed resins, when compared to ordinary gum and wood rosins, is quite remarkable.

As with all other soap stock materials, rosin has both advantages and disadvantages. In the light of reported experience and recent findings from research, the following appears to be a fair listing of the more evident advantages and disadvantages of the use of rosin in soap making.

Advantages:

1. Low price.
2. Dependable availability in large volume.
3. Good detergent action.
4. Quick and lasting suds.
5. Good solubility of soap.
6. Can be used in bar, chipped, powdered, and liquid soaps.
7. Reduces dusting (and resulting sneezing) of powdered soap.
8. Color of spray-dried and chipped soaps containing up to 15 per cent rosin compares favorably with similar soaps made without rosin.

Disadvantages:

1. Tendency to cause darkening.
2. Lower titer.
3. Higher unsaponifiable.
4. No by-product glycerine.

The cost of rosin in comparison with that of tallow is likely to

* Based on an article by Paul Mayfield, Hercules Powder Co., in the April, 1943, issue of *Soap and Sanitary Chemicals*.

remain low. As to availability, it is impossible, of course, to predict what the future situation on rosin supply will be; but today there appears no evidence of a shortage.

An opinion sometimes expressed is that rosin has no detergency value when incorporated into soap, and serves the part of a filler only. This is not the case. According to laboratory tests, addition of hydrogenated rosin, N wood, or H gum rosin up to 30 per cent has a tendency to improve detergency. Furthermore, sudsing activity and suds life have been found to be satisfactory when such soaps are used in both soft and hard water.

The effect of rosin addition on solubility of soap depends to some degree upon the fatty soap stock used. The general tendency is for the presence of rosin to increase solubility. But in no case has solubility of the soap been found to be decreased by the presence of rosin in the soap.

No soap maker should have any difficulty in using from 5 to 15 per cent of rosin in making light-colored bar soaps if the proper grade of rosin is chosen. Rosin is also being used successfully in the production of liquid soap wherein as high as 10 per cent of the fat stock is replaced by rosin.

Rosins have been successfully used in producing satisfactory quality chipped and spray-dried soap. An interesting observation relative to these finely divided soaps is a reduction in dusting in such soaps. Color also can be controlled. Of a group of test soaps studied, only one made to contain 15 per cent N wood rosin exhibited any noticeable increase in color over the control soap. These spray-dried soaps were tested for reversion by exposing them in an atmosphere of 80 per cent relative humidity at a temperature of 80° F. for periods up to eight months. At no time did they show any tendency to revert beyond a slight lumping which could be readily broken down by light tapping of the container.

As to the disadvantages of the use of rosin in soap, the low titer and failure to produce by-product glycerine are probably the most important. Although no glycerine is obtained on saponifying rosin, it is believed the advantages of rosin use are sufficient to outweigh such loss in the face of a fat shortage. Since rosin has been used so long and successfully in past years in the production of good soap, the question relative to low titer is not serious, it is believed. Between the skill of the soap maker and the choice of rosins available, the disadvantage of low titer should offer no serious handicap. High-melting resins, such as polymerized rosin, are naturally an added advantage in this respect.

The question sometimes arises as to how rosin should be added in the soap making process. Should it be added along with the fats and oils or should it be saponified separately and then added? Experience indicates either of these ways may be followed. One soap maker prefers one method while another swears by a different method. Since rosin is a different soap stock, it is to be expected that it may act somewhat differently than other stocks. It, therefore, follows that the skilled operator is going to adjust his operation to take care of any developments tending to give results different from those desired. Accumulated information indicates that any soap producer should have no real difficulty in making advantageous use of rosin to alleviate the conditions facing him today. And the probability is that most of those who make use of rosin under present conditions will end the war period with a continued use of rosin in at least some of their soap products.

Soap and Detergent Definitions

AMERICAN SOCIETY FOR TESTING MATERIALS
Committee D-12 on Soaps and Other Detergents

Soap—The product formed by the saponification or neutralization of fats, oils, waxes, rosins, or their acids with organic or inorganic bases.

Note — Various descriptive adjectives are applied to the name soap to indicate certain characteristics as follows:

(a) Method of manufacture, for example, boiled soap, cold-process soap.

(b) Physical form, for example, bar soap, chip soap, liquid soap, powdered soap.

(c) A special physical property, for example, floating soap, low-titer soap, milled soap, soft soap.

(d) A particular ingredient, for example, grit soap, tar soap.

(e) A particular application, for example, automobile soap, dry-cleaning soap, salt-water soap.

Alkaline Detergent—A water-soluble alkali or alkaline salt having detergent properties, but containing no soap.

Anhydrous Soap — Soap, free from water and all other concomitants. Note — The word "anhydrous" usually means free from water, but in the soap industry it has the additional meaning stated.

Anionic Detergent* — A detergent which produces negatively charged colloidal ions in solution.

Blended Soap—(for exampleBlended Palm Oil Soap)—A soap in which more than half but not all the fatty acid stock is from the source stated.

Builder—A material added to soap or synthetic detergent to improve its effectiveness under the condition of use.

Built Soap—A mixture of soap and one or more builders containing not less than 50 per cent of anhydrous soap.

Cationic Detergent* — A detergent which produces positively charged colloidal ions in solution.

Cleaning—A process of removing undesirable matter.

Detergency — Effectiveness of cleaning.

Detergent — A composition which cleans.

Dry Cleaning—A process of cleaning in a liquid medium, which is substantially non-aqueous.

Dry-Cleaning Detergent—(Dry-Cleaning Aid)—A detergent which when added to a dry-cleaning solvent increases cleaning effectiveness.

Filler—A material added to a soap or other detergent which does not improve its attractiveness or its effectiveness under the conditions of use.

(*Turn to Page* 152)

* Asterisk indicates new definition this year.

Use of Tall Oil in Soap*

CRUDE tall oil is a clear brown oil containing amounts of three classes of compounds: 1. fatty acids; 2. rosin acids; 3. non-acids such as sterols, higher alcohols, and other unsaponifiable matter. The individual identity of the component parts of each group has not been clearly established. The best work indicates that the fatty acids are all unsaturated 18 carbon monobasic acids, some oleic, but principally, linoleic acid.

That the rosin acids are not all abietic acid, the principal component of rosin, is clearly demonstrated by the fact that the rosin acids isolated from tall oil are not all solids at room temperatures. Abietic acid is a solid melting at about 170°C. (340°F.)

The non-acids in tall oil seldom exceed 10 per cent of the total, and while attempts to identify the individual members of this class have been made, few compounds have been positively identified. Reports indicate that over 20 plant sterols have been found, but in most cases, the tests were generic rather than specific. However, at least one sterol has been isolated in quantity from tall oil (5) (13).

Many attempts have been made at predicting the properties of tall oil, reasoning from the characteristics of the three classes of components. One reference (3) even goes so far as to call a mixture of fatty acids and rosin "synthetic tall oil." Such comparisons are often misleading, the actual properties being very different from those anticipated. For example, many in the soap industry have reasoned that the non-acids of tall oil like other unsaponifiable matter would settle out of dilute soap solutions. Actually nothing separates from tall oil soap solutions no matter how dilute.

From what has been said relative to the proportions of fatty and rosin acids in pine wood, it is not surprising that wide variations are encountered in the relative amounts of the three classes of compounds in tall oil. This is illustrated in Table 1, compiled from hundreds of analyses of commercial deliveries of crude tall oil from fifteen different sources.

TABLE 1

Analyses of Crude Tall Oil From Different Sources

Fatty Acids, Per Cent		*Rosin Acids, Per Cent*		*Non-Acids, Per Cent*	
High	Low	High	Low	High	Low
56	30	64	34	22	5.5

Obviously, with such wide variations some tall oils will not be saleable except in special cases. Fortunately the tall oil obtained from any one source does not vary widely, and individual producers are able to sell tall oil having a limited range of analyses. For example, the range of analyses for the largest American producer of crude is advertised (16) to be:

TABLE 2

Crude Tall Oil Range of Analyses

PHYSICAL DATA	
Specific Gravity, 60°F.-60°F.	0.97-0.99
Pour Point, not over, °F.	45
Viscosity—Saybolt Universal at 210°F.—Seconds	95-120
Flash Point, °F.	350-370
Fire Point, °F.	410-430
Color	Brown
Moisture, less than, %	0.4
CHEMICAL DATA	
Acid Number	160-170
Saponification Number	165-175
Rosin Acids Number	80- 90
Iodine Number (Wijs)	140-150
Ash, less than, %	0.4
ANALYSIS	
Fatty Acids, %	45-50
Rosin Acids, % calc. as abietic	42-48
Sterols, Higher Alcohols, etc., %	6-9

Crude tall oil can be refined by various methods to give a light-colored oil possessing a mild odor. Of the refining processes proposed to date, vacuum distillation is the one most generally practiced on a commercial scale. While the vacuum distillation of tall oil is not difficult, it is a much more complicated operation than the conversion of skimmings to crude tall oil. At present there are only a few tall oil refineries in operation, and their production is limited.

While efforts at increasing the output of refined tall oil are in progress, users of tall oil should carefully weigh their need for this higher cost material. Users seldom demonstrate any difference in the chemical properties between crude and refined tall oils. The difference is chiefly one of color and of odor, and often as will be shown in some of the uses reviewed below, this is not so important as it first seems.

The refined tall oil sold by the largest producer in the United States has the following range of analyses (16).

TABLE 3

Refined Tall Oil Range of Analyses

PHYSICAL DATA	
Specific Gravity 60°F.-60°F.	0.96-0.98
Viscosity—Saybolt Universal at 210°F.—Seconds	50- 70
Flash Point, °F.	350-380
Fire Point, °F.	410-430
Color—Lovibond using half column	
Yellow—not more than	70
Red—not more than	40
Moisture, less than, %	0.1
CHEMICAL DATA	
Acid Number	170-180
Saponification Number	170-185
Rosin Acids Number	63- 71
Ash, less than, %	0.1
ANALYSIS	
Fatty Acids, %	55-60
Rosin Acids, % calc. as abietic	34-38
Sterols, Higher Alcohols, etc., %	6-10

Tall Oil for Soap

In European countries, tall oil has been produced since the turn of the century and its use in soaps and soap products is well known. Numerous references in European literature report that tall oil soaps have excellent foaming, emulsifying, and detergent properties (1) (4) (6). These results have been substantiated in the United States

* Based on an article by R. Hastings, A. Pollak and J. M. Wafer of Ind. Chem. Sales Div., W. Va. Pulp & Paper Co., in the May, 1943 issue of *Soap and Sanitary Chemicals.*

by the steadily increasing demand for tall oil by American soap manufacturers.

Tall oil has much the same properties as red oil and other fatty acids, and for soap making has certain advantages over the fats usually used. Manufacturers of soap products hampered by limited plant capacities will appreciate the fact that tall oil saponifies rapidly when alkalies are added and does not require boiling or salting out. It is also unnecessary to use excess alkali to make the saponification complete. Because of the rapid saponification, tests for excess alkali or fatty acid can be made soon after mixing without danger of further change due to slow and delayed reactions. Glycerine does not form as a by-product, and therefore, the entire fat content goes into the formation of soap. Mild alkalies such as triethanolamine which do not react with whole fats, can be used with tall oil to form specialty soaps.

Liquid and Paste Soaps

Tall oil, unblended with other fats, forms liquid or paste soaps depending on the moisture content. Tall oil soap solutions are less viscous than those prepared from most other fats or fatty acids. Soaps of fluid consistency may be prepared with the soap content running as high as 45 per cent of the solution. At room temperatures liquid soaps of tall oil may be stored indefinitely without gelling. These soaps are very soluble even in cold water. The pH in dilute solutions does not differ from that of other soaps.

To prepare a liquid soda or potash soap of tall oil the following typical procedure is recommended:

1. Heat the tall oil with agitation in a tank or other suitable container to 150-175° F. until any crystals present have dissolved. This operation will require only 5 to 10 minutes heating after reaching 150° F.
2. For each 1,000 pounds of tall oil used, weigh out 125 pounds of caustic soda or 175 pounds of caustic potash, 100 per cent basis.
3. Dissolve the caustic soda or potash in the total amount of water used. The amount of water used will depend on the desired soap content of the finished soap solution.
4. Slowly add the alkali solution to the tall oil with agitation.
5. Continue the agitation until the mixture becomes uniform.

By using the above proportions of tall oil and alkali, the soap formed will not contain appreciable amounts of free alkali. If desired, soap builders and excess alkali may be added. The amount used is best determined by trial, but in general will not differ materially from the amounts of excess alkali and builders used with other soaps.

The following instructions apply generally to the preparation of high concentration paste soaps from tall oil.

1. Heat the tall oil to about 175° F. until any crystals have dissolved.
2. Heat requisite amount of 30 per cent caustic solution (see step 2 under preparation of liquid soaps) to 175° F. Either sodium or potassium hydroxide or their mixtures may be used.
3. Slowly pour the hot caustic solution into the hot tall oil with slow agitation. Mechanical agitators should operate at slow speeds and should be well submerged to prevent entrainment of air.
4. Add enough 175° water to bring the soap to the desired water content. If no water is added, using caustic soda an 80 per cent soap results, using caustic potash, a 74 per cent soap.
5. Continue agitation until uniform.

In the United States, liquid and paste soaps of tall oil have proved effective for scouring wool, rayon, and cotton linters, for the degumming of silk and depitching of rayon pulps. In European literature Henk (7) states "Tall oil soap can be used for the most varied textile requirements, including scouring raw wool, washing white woolens, washing cotton, dyeing, desizing, degumming of silk."

It is reported (14) that in Finland an important producer of tall oil soap prepares a paste soap by saponification with 35° Baume caustic soda. It is claimed that the tall oil soap is very good for removing soil containing mineral oil, tar, and soot. The paste soap is also packed in tubes and used as a hand soap. Hellstrom (6) reports that in Finland the amount of tall oil soap consumed is 25 per cent of the cleaning product consumption.

Liquid tall oil soaps give excellent results in laundries, especially for those specializing in the washing of overalls, wiping cloths, etc. In recent years, the comparatively high cost of soap has induced some commercial laundries to reduce the amount of soap used or to abandon its use in favor of inorganic compounds. Since tall oil sells well below the prices of other fats, laundries have here a source of low cost soap. For laundry use, tall oil soap is made up in one of two ways: 1. By adding tall oil directly to the wash wheel and then adding caustic soda; 2. By mixing tall oil and caustic soda in a tank or drum and using the resulting soap solution.

Based on actual experience in many laundries in the United States and substantiated by experimental laundering tests in Europe (10), tall oil soap leaves no residual odor in washed fabrics. The reference cited states, "It has been claimed in the literature that soap, cooked with crude tall oil, used in laundering imparts a disagreeable odor to the fabric. In the experimental launderings marked by higher lather, we were unable to detect this phenomenon; sample fabrics after laundering had no odor."

Tall Oil in Hard Soaps

Hard soaps cannot be prepared from tall oil alone by any graining process. Hard soaps can be obtained however, by drying processes or by adding soap builders such as soda ash. For example, a German patent (7) claims a process for producing a hard soap from tall oil soap paste in which the tall oil soap paste is kneaded by known means with 2 to 15 per cent of calcined soda. In carrying out this invention, 6,500 kg. of tall oil were neutralized with 33° Baume caustic soda, whereby 10,000 kg. of soap paste was obtained. Eight hundred kg. of calcined soda ash were added and kneaded into the soap. The kneaded mass was sent over a cooling roll from which it was transferred to a packaging ma-

chine. In this machine, the mass was kneaded once more and pressed into cakes of about one-half kg. The soap cakes coming out of the machine took on a hard firm form after a short time.

Tall oil mixed with other fats is used in the preparation of hard soaps. There are a number of articles (2), (4), (9), (10), (11), (12), (14), which describe these hard soaps containing tall oil. In these references up to 25 per cent of tall oil is used in the soap stock. Above this amount the soap tends to be soft, unless builders, such as soda ash, are also added. These mixed soaps may be prepared by mixing the tall oil with the usual fat and saponifying the mixture following standard procedure. It is preferable to saponify the fat separately and then add the tall oil near the end of the boil much as is done with rosin. The latter method is preferable on a cost basis since tall oil does not have to be boiled when converted to soap.

As a typical illustration of a hard soap containing tall oil Straus (14) uses the following soap stock:

	Parts
Hard fat	50
Tall oil	20
Coconut fatty acids	20
Peanut oil fatty acids	10

This soap stock when saponified with caustic soda and salted out gave a light brown soap.

Straus also states that the following soap stock is used for the preparation of a toilet soap.

	Per Cent
Hard fat	53.7
Tallow	29.
Rosin	5.2
Refined tall oil	12.1

Hard soaps containing tall oil have been sold in the form of bar and chip soaps. It is reported that chip soaps containing tall oil may be prepared following standard practices.

Tall Oil in Soap Powders

Soap powders prepared with tall oil as part of the soap stock are giving good results and today considerable quantities of tall oil are used in this way. For these powders, tall oil or crude tall oil skimmings, are mixed with cottonseed foots or other similar material. After complete saponification, calcined soda ash is mixed in and the mixture allowed to air dry. The amount of tall oil used in these soap powders has varied all the way from 10 to 50 per cent of the total fat content. The amount of soap in these powders has usually been around 20 per cent of the total soap powder.

Crude tall oil skimmings have been spray dried experimentally on a semi-commercial scale. The spray dried soap beads formed were free flowing and light yellow in color.

In addition to the products described, tall oil finds use in soap specialties as liquid, jelly, and pine oil scrub soaps, garage floor cleaners, and dry cleaning and rug cleaning soaps. With specialty soaps containing expensive alkalies such as triethanolamine, tall oil is preferable to other fatty acids due to its comparatively low alkali requirement.

References

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(3) Anon. Synthetic Tall Oil, "Oil, Paint & Drug Reporter" *143*, No. 5, 20 (1943).

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(11) Pollak, A. Fatty Acids from Pulp Mill Wastes, "Oil & Soap" *15*, 33-4 (1938).

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(13) Sandquist, H. and Linstrom. Process for the Recovery of Phytosterin, Fatty and Resinic Acids Obtained from the Raw Sulphate Soap as Byproduct in the Manufacture of Sulphate Pulp. Swedish Patent No. 80,941.

(14) Straus, R. Tall Oil Soap, "Deutche Parfumerie Ztg." *25*, 406-9 (1939).

(15) Wafer, J. M., Pollak, A., and Hastings, R. Tall Oil for the War Effort. Paper presented at Annual Meeting of Tech. Assoc. of the Pulp & Paper Ind., Hotel Commodore, New York City, February 15-18, 1943.

(16) West Virginia Pulp & Paper Company. Liqro and Indusoil. Tall Oil from Pine Wood—1942.

SOAP DEFINITIONS

(*From Page* 149)

Scouring—A wet process of cleaning by chemical or mechanical means, or both.

Soap Powder—A mixture in powdered form of soap and one or more alkaline detergents, but principally composed of the latter.

Soil — Undesirable matter to be removed by cleaning.

Soil-Redeposition — Deposition of removed soil on a surface during a cleaning process.

Straight Soap (for example Straight Palm Oil Soap)—A soap in which the fatty acid stock is solely from the source stated.

Surface Active Agent*—A composition which when added to a liquid medium modifies the properties of the medium at a surface or interface.

Note—"Surface Active Agent" is the general term which includes soluble detergents used in liquid medium, wetting agents and foaming agents.

Synthetic Detergent — A detergent produced by chemical synthesis and comprising an organic composition other than soap.

Titer* (pron. té'ter) (of fatty acids) —The maximum temperature achieved during the solidification of fatty acids, which have been cooled below the melting point.

Washing—A process of cleaning in an aqueous medium.

Water-Break — Failure of water to maintain a continuous film on metallic, vitreous or similar surfaces on withdrawing from clean water.

Wet Cleaning (Dry-Cleaning Industry)—Cleaning processes with aqueous media, employed in the dry cleaning industry.

Wetting Agent—A composition which when added to a liquid medium increases the spreading of the medium on a surface or the penetration of the medium into a material.

Whiteness-Retention — Comparative whiteness of original and cleaned fabric.

Government Orders

Orders of the FDA and OPA covering oil and fat use, recovery and sale of glycerine and quality and size of soap bars and packages

GLYCERINE RECOVERY
FDO-33

[FDO 33, Amdt. 1]

PART 1460—FATS AND OILS

REQUIRED RECOVERY OF GLYCERINE

Food Distribution Order 33 (8 F.R. 3475), issued by the Acting Secretary of Agriculture on the 19th day of March 1943 is amended to read as follows:

§ 1460.2 *Glycerine recovery*—(a) *Definitions.* (1) The term "fats and oils" means all of the raw, crude, and refined fats and fatty oils and greases.

(2) The term "neutral fats or oils content" means that saponifiable portion of fats or oils at point of saponification or hydrolysis obtained by substracting from the total weight of such fats and oils the sum of the following: free fatty acids, moisture, insoluble impurities, and unsaponifiables. Free fatty acids, moisture, insoluble impurities, and unsaponifiables shall be determined by the official methods of the American Oil Chemists Society.

(3) The term "fair average quality crude glycerine" means soap lye crude glycerine and saponification crude glycerine meeting the following specifications:

Soap lye crude glycerine:
Glycerol content—not less than 80 per cent.
Ash—not more than 10 per cent.
Organic Residue—not more than 2 per cent.

Saponification crude glycerine:
Glycerol content—not less than 88 per cent.
Ash—not more than 2 per cent.
Organic Residue—not more than 1.5 per cent.

Glycerol content, ash, and organic residue shall be determined by the official methods of the American Oil Chemists Society.

(4) The term "person" means any individual, partnership, association, business trust, corporation, or any organized group of persons, whether incorporated or not.

(5) The term "quarter" means any of the three month periods beginning on January 1, April 1, July 1, or October 1, of any year.

(6) The term "commercial producer of glycerine" means any person who in any quarter uses or consumes more than 150,000 pounds of fats and oils in soap making or fat splitting or in any other operation resulting in the release of glycerine from fats and oils. However, no person shall be construed as being a commercial producer of glycerine with respect to his operations in the sulfonating of fats and oils, the alkali or acid refining of fats and oils, the manufacture of lubricating greases from fats and oils, or the processing of fats and oils for food.

(7) The term "Director" means the Director of Food Distribution, War Food Administration.

(b) *Requirements with respect to the recovery of crude glycerine.* Subject to the provisions of (d) hereof:

(1) Unless and except as specifically authorized by the Director, no commercial producer of glycerine shall use or consume any fats and oils in any operation resulting in the release of glycerine from fats and oils except the saponification or hydrolyzation of fats and oils in soap making or fat splitting.

(2) No commercial producer of glycerine shall saponify or hydrolyze fats and oils in soap making or fat splitting unless:

(i) Where glycerine is released by the saponification of the fats and oils (soap making), the average amount (computed for the production of each quarter) of glycerol (both free and combined) remaining in the finished product, not considering glycerine produced from commercial fatty acids, vegetable oil foots, or fats and oils used or consumed pursuant to the provisions of (d) hereof, shall not be more than 1 per cent, calculated on the anhydrous soap basis of that portion of the soap which is derived from fats and oils, but exclusive of any portion of the soap which may be made from rosin, commercial fatty acids, vegetable oil foots, tall oil, and fats and oils used or consumed pursuant to the provisions of (d) hereof, and not less than 92 per cent of the glycerol content of the spent lyes shall be recovered as crude glycerine (100 per cent glycerol basis). The glycerol content of such spent lyes shall be considered to be the glycerol theoretically contained in the neutral fats or oils content of the stock originally used, less the maximum amount of glycerol permitted in the soap, and less the amount of glycerine in fats and oils used or consumed pursuant to the provisions of (d) hereof, and

(ii) Where the glycerine is released by the hydrolysis of fats and oils (fat splitting), the average split (computed for the production of each quarter) shall be not less than 95 per cent complete. Not less than 94 per cent of the glycerol content of the glycerine sweet water resulting from such splitting process shall be recovered as crude glycerine (100 per cent glycerol basis). The glycerol content of such sweet water shall be considered to be the glycerol theoretically contained in the neutral fat or oil content of the stock originally used, less the maximum permitted amount (based on 95 per cent split) of glycerol contained in the split fat or oil, and less the quantity of glycerine present in fats and oils used or consumed pursuant to the provisions of (d) hereof.

(c) *Required standard of refining crude glycerine.* No person shall refine fair average quality crude glycerine, unless at least 96 per cent of the glycerol content of the crude glycerine shall be recovered as refined glycerine (100 per cent glycerol basis).

(d) *Exceptions.* The restrictions of (b) (2) hereof shall not apply to:

(1) The use or consumption of fats and oils by any commercial producer of glycerine in any of the following operations:

(i) The manufacture of the following medicinal soaps: U S. P. XII, to fill orders for medicinal use only; sapo mollis medicinalis; linimentum saponis mollis; or liquor cresolis saponatus;

(ii) The manufacture of soft soap, hospital grade, according to United States Army specification No. 4-1027A (February 5, 1941) for delivery to the United States Army.

(iii) The manufacture of U. S. P. XII soap, for use in denaturing Formula 27B alcohol; or

(iv) The manufacture of soap or fatty acids from raw or acidulated domestic vegetable oil foots.

(2) The use or consumption of a quantity of fats and oils not in excess of 150,000 pounds in any quarter by any commercial producer of glycerine. This exception shall be in addition to the exceptions provided for in (d) (1) hereof.

(e) *Records and reports.* (1) Unless otherwise ordered by the Director:

(i) Any refiner of glycerine, regardless of the amount refined,

(ii) Any commercial producer of glycerine, and

(iii) Any person who, in any quarter, saponifies or hydrolyzes more than 150,000 pounds of fats and oils, and fatty acids, even though all or a part of such fatty material may not bear glycerine, shall report his recovery of glycerine for each quarter to the Director of Food Distribution, War Food Administration, Washington 25, D. C., Ref. FDO 33, on or before the twentieth day of the succeeding quarter on Form FDO 33-1 (Revised 12-18-43), in accordance with the instructions on such form. Every person who is both a producer of crude glycerine and a refiner of crude glycerine shall file a separate report in each capacity, except that a refiner who refines only his own production of crude glycerine may make a single report covering both production and refining.

(2) Every person subject to this order shall maintain such records for at least two years (or for such other periods of time as the Director may designate), and shall execute and file such other reports upon such forms and submit such information as the Director may from time to time request or direct, and within such times as he may prescribe.

(3) The record-keeping and reporting requirements of this order have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942. Subsequent record-keeping or reporting requirements will be subject to the approval of the Bureau of the Budget pursuant to the Federal Reports Act of 1942.

(f) *Contracts.* The restrictions of this order shall be observed without regard to contracts heretofore or hereafter entered into, or any rights accrued, or payments made thereunder.

(g) *Effect on other orders.* Where different standards of recovery are imposed by this order and any other government order or orders, the provisions of the order requiring the highest glycerine recovery shall control.

(h) *Petition for relief from hardship.* Any person affected by this order who considers that compliance herewith would work an exceptional and unreasonable hardship on him, because he is unable to recover the required amount of glycerine with the facilities he has or may be reasonably expected to secure or utilize, or for any other reason, may file a petition for relief in writing with the Director, addressed as follows: Director of Food Distribution, War Food Administration, Washington 25, D. C., Ref. FDC-33. Such petition shall set forth all pertinent facts and the nature of relief sought. The Order Administrator of this order shall then act upon the petition. In the event that the petitioner is dissatisfied with the action taken by the Order Administrator, he may request a review of such action by the Director whose decision with respect to the relief sought shall be final.

(i) *Violations.* The War Food Administrator may, by suspension order, prohibit any person who violates any provision of this order from receiving, making any deliveries of, or using glycerine, or any other material subject to priority or allocation control by the War Food Administrator, and may recommend that any such person be prohibited from receiving, making any deliveries of, or using materials subject to the priority or allocation control of other governmental agencies. In addition, any person who wilfully violates any provision of this order is guilty of a crime and may be prosecuted under any and all applicable laws. Further, civil action may be instituted to enforce any liability or duty created by, or to enjoin any violation of, any provision of this order.

(j) *Audits and inspections.* The Director shall be entitled to make such audit or inspection of the books, records and other writings, premises or stocks of glycerine of any person, and to make such investigations, as may be necessary or appropriate, in his discretion, to the enforcement or administration of the provisions of this order.

(k) *Communications.* All reports required to be filled hereunder and all communications concerning this order shall, unless instructions to the contrary are issued by the Director, or otherwise provided herein, be addressed to the Director of Food Distribution, War Food Administration, Washington 25, D. C., Ref. FDO-33.

(l) *Delegation of authority.* The administration of this order and the powers vested in the War Food Administrator, insofar as such powers relate to the administration of this order, are hereby delegated to the Director, and may be redelegated by him to any employee of the United States Department of Agriculture.

(m) *Territorial extent.* This order shall apply only in the forty-eight States of the United States, and the District of Columbia.

(n) *Conservation Order M-193 superseded.* This order supersedes in all respects Conservation Order M-193 (7 F.R. 9128) of the War Production Board, except that as to violations of said order or rights accrued, liabilities incurred, or appeals taken under said order prior to the effective date hereof, said conservation order shall be deemed in full force and effect for the purpose of sustaining any proper suit, action, or other proceeding with respect to any such violation, right or liability. Any appeal pending under said conservation order shall be considered under paragraph (h) hereof.

(o) *Effective date.* This amendment shall become effective on the 1st day of January 1944, at 12:01 a. m., e. w. t. However, with respect to violations of Food Distribution Order 33, or rights accrued or liabilities incurred thereunder, prior to said date, said Food Distribution Order 33 shall be deemed in full force and effect for the purpose of sustaining any proper suit, action, or other proceeding with respect to any such violation, right, or liability.

(E.O. 9280, 7 F.R. 10179; E.O. 9322, 8 F.R. 3807; E.O. 9334, 8 F.R. 5423; E.O. 9392, 8 F.R. 10783)

Issued this 23d day of December 1943.

ASHLEY SELLERS,
Assistant War Food Administrator.

GLYCERINE USE

FDO-34

Restrictions on Civilian Use of Glycerine Have Been Suspended by the WFA for April, May and June, 1944

[FDO 34, Amdt. 2]

PART 1460—FATS AND OILS
GLYCERINE

Food Distribution Order 34, as amended (8 F.R. 14194), issued by the Assistant War Food Administrator on October 18, 1943, is amended to read as follows:

§ 1460.3 *Glycerine; use and distribution restricted*—(a) *Definitions:*

(1) The term "glycerine" means any and all concentrations of glycerol, from whatever source derived and whether crude or refined.

(2) The term "producer" means any person engaged in the production of glycerine and includes any person who has glycerine produced for him pursuant to a toll agreement and any person who, on splitting any fat or oil, is

entitled to the glycerine resulting therefrom. The term does not include any refiner of glycerine.

(3) The term "refiner" means any person engaged in the refining of glycerine.

(4) The term "distributor" means any person who has purchased or purchases glycerine for purposes of resale.

(5) The term "base period" means the calendar year 1940.

(6) The term "calendar quarter" means any of the several three-month periods beginning on January 1, April 1, July 1, or October 1 of any year.

(7) The term "person" means any individual, partnership, association, business trust, corporation, or any organized group of persons, whether incorporated or not.

(8) The term "Director" means the Director of Food Distribution Administration, War Food Administration.

(b) *General restriction on use.* Except as provided in (c) and (d) hereof, no person shall use glycerine, unless and except as specifically authorized by the Director. Applications for such authorization shall be made on Form FDA-478, or such other form or forms as the Director may prescribe.

(c) *Unrestricted uses.* Notwithstanding the provisions of (b) hereof, specific authorization by the Director shall not be required for the use by any person of glycerine in any class of use listed in Schedule A below.

SCHEDULE A

Class of use

(1) The manufacture of, or use as, aircraft deicing fluid.
(2) The manufacture of camouflage cloth and camouflage paint.
(3) The manufacture of cellulose meat casings.
(4) The manufacture of cutting oils and cutting oil emulsifiers.
(5) The manufacture of drugs, pharmaceuticals, and medical supplies.
(6) The manufacture of emulsifiers for margarine.
(7) The manufacture of emulsifiers for shortening.
(8) The manufacture of, or use as, evaporation and oxidation inhibitor for ethyl fluid for aviation gasoline.
(9) The manufacture of explosives.
(10) The manufacture of fire retardant.
(11) The manufacture of mechanical and food closure gaskets.
(12) The manufacture of grinding compounds.
(13) The manufacture of, or use as, hydraulic fluid.
(14) The manufacture of industrial pressure sensitive tape.
(15) Use in the processing of leather.
(16) The manufacture of leather substitutes for shoe linings.
(17) The manufacture of litharge-glycerine cement.
(18) The manufacture of, or use as, a lubricant for machines or ships.
(19) The manufacture of masking compounds for military or naval aircraft.
(20) The manufacture of metal drawing compounds.
(21) The manufacture of flotation reagents for concentrating minerals.
(22) Use in concentration of minerals by flotation.
(23) The manufacture of packing compounds.
(24) The manufacture of parachute cloth.
(25) The manufature of printing rollers.
(26) The manufacture of printing supplies.
(27) Use in the quick freezing of food.
(28) Use in research and control laboratories for testing or experimental purposes.
(29) The manufacture of resins for impregnating and sealing fiber containers for oil, gasoline, paint, food, water, or corrosive chemicals.
(30) Use in the processing of rubber.
(31) The manufacture of photosensitive paper.
(32) The manufacture of shoe adhesives.
(33) The manufacture of soldering flux.
(34) The manufacture of textile dyes.
(35) The manufacture of textile oils.
(36) The manufacture of welding electrodes.

Class of use

(37) The manufacture of any product delivered or contracted for delivery to any of the agencies or persons named in (e) (2) hereof, or the manufacture of any intermediate product to be used in the manufacture of such a product.

(d) *Uses subject to quota restrictions.* Notwithstanding the provisions of (b) hereof, specific authorization by the Director shall not be required for the use of glycerine by any person in any calendar quarter in any class of use listed in Schedule B below, in a quantity not in excess of a quota equal to the percentage specified for such class of use in said Schedule B of the quantity of glycerine used in the corresponding calendar quarter of the base period by such person in such class of use.

SCHEDULE B

Class of use:	*Permitted percentage*
(1) The manufacture of adhesives	100
(2) The manufacture of beverages, flavors, candy, and gum	100
(3) The manufacture of cellophane other than cellophane caps or bands	100
(4) The manufacture of cellophane caps and bands	100
(5) The manufacture of cork products (other than mechanical gaskets, food closures, and crown liners)	100
(6) The manufacture of cosmetics, toilet preparations, dentifrices, and shaving preparations	100
(7) The manufacture of crown liners	100
(8) The manufacture of glassine and greaseproof paper	100
(9) The manufacture of paper (other than photosensitive, glassine or greaseproof paper	100
(10) The manufacture of protective coatings, including, but not limited to, alkyd resins, ester gums, and varnishes	100
(11) The manufacture of synthetic detergents and emulsifiers (other than emulsifiers for margarine or shortening)	100
(12) Textile printing, dyeing, and finishing	100
(13) Processing of tobacco	100

In addition to the amounts of glycerine which may be used pursuant to the foregoing provisions of this paragraph (d), any person, in any calendar quarter, may use, in the aggregate, in classes of use listed under Schedule B hereof, 3500 pounds or less of glycerine, without specific authorization by the Director.

(e) *Exceptions.* (1) Notwithstanding the provisions of (b) hereof, any person, in any calendar quarter may use, in the aggregate, in classes of use not listed under Schedule A of (c) or Schedule B of (d) hereof, 50 pounds or less of glycerine, without specific authorization by the Director.

(2) The restrictions of (b) and (d) hereof shall not apply to the use of glycerine by the Army, Navy, Marine Corps, or Coast Guard of the United States; the War Shipping Administration; the United States Maritime Commission; The Veterans' Administration; or any other instrumentality or agency designated by the War Food Administrator.

(3) The restrictions of (b) hereof shall not apply to the use of crude glycerine by a refiner for the production of refined glycerine.

(f) *Prohibited uses.* Notwithstanding any other provision of the order:

(1) No person shall use or consume glycerine in the manufacture of any antifreeze product for use as a coolant in gasoline or Diesel engines, nor shall any person use glycerine as a coolant in a gasoline or Diesel engine.

(2) No person shall use or consume glycerine in the manufacture of soap other than shaving soap or cream.

(3) No person shall use glycerine or an emulsifier containing glycerine in the manufacture of margarine, unless the amount of glycerine present in the finished margarine, which was added as a separate ingredient (including glycerine added as a separate ingredient in producing an emulsifier used in the manufacture of such margarine), does not exceed 0.06 per cent of the fat content of such margarine, computed on a weight basis.

(4) No person shall use glycerine or an emulsifier containing glycerine in the manufacture of shortening, unless the amount of glycerine present in the finished shortening, which was added as a separate ingredient (including glycerine added as a separate ingredient in producing an emulsifier used in the manufacture of such shortening), does not exceed 1 per cent of the fat content of such shortening, computed on a weight basis.

(g) *Further allocations.* Notwithstanding any other provision of this order, the Director is authorized to isue, at any time, orders requiring glycerine to be set aside for sale and delivery to governmental agencies, or restricting the grades of glycerine which may be produced or refined by a producer or refiner.

(h) *Records and reports.* (1) Each producer, refiner, or distributor who, in any month produces crude glycerine, refines crude glycerine, or delivers more than 1150 pounds of glycerine shall file with the Director on or before the 15th day of the succeeding month one copy of Form FDO-34-1 (Revised) or such other form or forms as may be prescribed by the Director.

(2) Every person who uses or consumes 1150 pounds or more of glycerine in any calendar month shall fill out and file, on or before the 15th day of the following month, Bureau of the Census Form BM-1, with the Bureau of Census, Washington 25, D. C. The foregoing provision shall not be construed as requiring any person to file more than one Form BM-1 for any calendar month.

(3) Every person subject to this order shall, for at least two years (or such period of time as the Director may designate), maintain an accurate record of his transactions in glycerine. Such records shall reflect the amount of glycerine used by him in each calendar quarter in each class of use listed in Schedule "A" of (c) and Schedule "B" of (d) hereof.

(4) The Director shall be entitled to obtain such information from, and require such reports and keeping of such records by, any person, as may be necessary or appropriate, in his discretion, to the enforcement or administration of the provisions of this order.

(5) The record-keeping and reporting requirements of this order have been approved by the Bureau of the Budget in accordance with the Federal

Reports Act of 1942. Subsequent record-keeping or reporting requirements will be subject to the approval of the Bureau of the Budget pursuant to the Federal Reports Act of 1942.

(i) *Audits and inspections.* The Director shall be entitled to make such audit or inspection of the books, records, and other writings, premises or stock of glycerine of any person, and to make such investigations, as may be necessary or appropriate, in his discretion, to the enforcement or administration of the provisions of this order.

(j) *Petition from relief of hardship.* Any person affected by this order who considers that compliance therewith would work an exceptional and unreasonable hardship on him, because he did not use glycerine in the base period, or used in such period a substantially lower amount of glycerine than his current requirements, or for any other reason, may file a petition for relief in writing with the Director, addressed as follows: Director of Food Distribution, War Food Administration, Washington 25, D. C., Ref. FDO 34. Such petition shall set forth all pertinent facts and the nature of the relief sought. The Administrator of this order shall then act upon the petition. In the event that the petitioner is dissatisfied with the action taken by the Administrator of this order, he may request a review of such action by the Director whose decision with respect to the relief sought shall be final.

(k) *Prior relief cancelled.* Any base period use of glycerine established for a petitioner prior to the effective date of this amendment under the appeal provisions of War Production Board Order K-58 (7 F.R. 10329) or Food Distribution Order 34 (8 F.R. 3476) or Food Distribution Order 34, as amended (8 F.R. 14194) is hereby cancelled. Any person affected by this cancellation may apply for relief in accordance with (j) hereof.

(l) *Violations.* The War Food Administrator may, by suspension order, prohibit any person who violates any provision of this order from receiving, making any deliveries of, or using glycerine, or any other material subject to the priority or allocation control by the War Food Administrator, and may recommend that any such person be prohibited from receiving, making any deliveries of, or using materials subject to the priority or allocation control of other governmental agencies. In addition, any person who wilfully violates any provision of this order is guilty of a crime and may be prosecuted under any and all applicable laws. Further, civil action may be instituted to enforce any liability or duty created by, or to enjoin any violation of, any provision of this order.

(m) *Delegation of authority.* The administration of this order and the powers vested in the War Food Administrator insofar as such powers relate to the administration of this order, are hereby delegated to the Director, and may be redelegated by him to any employee of the United States Department of Agriculture.

(n) *Communications.* All reports required to be filed hereunder and all communications concerning this order shall, unless instructions to the contrary are issued by the Director, or otherwise provided herein, be addressed to the Director of Food Distribution, War Food Administration, Washington 25, D. C. Ref. FDO 34.

(o) *Territorial extent.* This order shall apply only in the 48 States of the United States, and the District of Columbia.

(p) *Effective date.* This amendment shall become effective at 12:01 a. m., e. w. t. January 1, 1944. However, with respect to violations of said Food Distribution Order 34, as amended, or rights accrued or liabilities incurred thereunder prior to said date, said Food Distribution Order 34, as amended, shall be deemed to be in full force and effect for the purpose of sustaining any proper suit, action, or other proceeding with respect to any such violation, right, or liability.

(E.O. 9280, 7 F.R. 10179; E.O. 9322, 8 F.R. 3807; E.O. 9334, 8 F.R. 5423; E.O. 9392, 8 F.R. 14783)

Issued this 30th day of December 1943.

ASHLEY SELLERS,

Assistant War Food Administrator.

PALM OIL
FDO-38

[FDO 38]

PART 1460—FATS AND OILS

RESTRICTIONS ON USE, CONSUMPTION, PROCESSING, SALE AND DELIVERY OF PALM OIL

Pursuant to the authority vested in me by Executive Order No. 9280, dated December 5, 1942, and to assure an adequate supply and efficient distribution of palm oil to meet war and essential civilian needs, *It is hereby ordered,* As follows:

§ 1460.9 *Use, consumption, processing, sale and delivery of palm oil restricted—*(a) *Definitions.* When used in this order, unless otherwise distinctly expressed or manifestly incompatible with the intent thereof:

(1) The term "palm oil" means all oils of any grade or description, heretofore known or sold as palm oil, whether crude, refined, bleached, or deodorized.

(2) The term "dealer" means any person who imports, buys, sells, or distributes palm oil.

(3) The term "person" means an individual, partnership, corporation, association, or other business entity.

(4) The term "Director" means the Director of Food Distribution, United States Department of Agriculture, or any employee of the United States Department of Agriculture designated by such Director.

(b) *General restrictions on use.* Unless specifically authorized by the Director, no person shall use or consume palm oil except in the following manufactures or processes:

(1) The manufacture of tin plate, terne plate, long terne plate, steel sheets, steel strip, and black plate;

(2) Any manufacture, process or use in which glycerine is produced in compliance with the provisions of Food Distribution Order No. 33;

(3) Any manufacture, process, or use by any person whose total use or consumption of palm oil is less than 2,000 pounds in each of the several three month periods of the year commencing on January 1, April 1, July 1, and October 1.

(c) *Restrictions on processing.* No person shall hereafter put in process or change the condition of any palm oil in preparation for any manufacture, process, or use permitted by this order except to the extent necessary for such preparation and then only in such quantities as may be necessary to meet his normal production schedule or, if such palm oil is to be manufactured or used by another person, then the normal production schedule of such other person.

(d) *Reserve.* Every person who was required by General Preference Order M-59 of the War Production Board (7 F.R. 2186) to set aside an inventory quota of palm oil shall use, put in process, sell, or deliver all or any part of such quota only upon express instruction of the Director, except that this paragraph (d) shall not be construed to prevent changing the condition of the oil so set aside to the extent necessary to prevent deterioration while carried in inventory.

(e) *Restrictions on sales and deliveries.* No person shall sell or deliver any palm oil to any other person, except a dealer or a person using such oil in the manufactures, processes, or uses set out in paragraph (b) hereof, except as may be specifically authorized by the Director.

(f) *Intra-company transactions.* The prohibitions or restrictions contained in this order with respect to deliveries shall in the absence of a contrary direction, apply not only to deliveries to other persons, including affiliates and subsidiaries, but also to deliveries from one branch, division, or section of a single enterprise, to another branch, division, or section of the same or any other enterprise owned or controlled by the same person.

(g) *Existing contracts.* The restrictions of this order concerning the use, consumption, processing, sale, and delivery of palm oil shall be observed without regard to existing contracts or any rights accrued or payments made thereunder.

(h) *Records and reports.* Every person subject to this order shall maintain such records for at least two years (or for such other period of time as the Director may designate) and shall execute and file such reports upon such forms and submit such information as the Director may from time to time re-

quest or direct, and within such time as he may prescribe, subject to the approval of the Bureau of the Budget pursuant to the Federal Reports Act of 1942.

(i) *Audits and inspections.* Every person subject to this order shall, upon request permit inspections, at all reasonable times, of his stocks of palm oil and of the premises used in his business,and all of his books, records, and accounts shall, upon request, be submitted to audit and inspection by the Director.

(j) *Petition for relief from hardship.* Any person affected by this order who considers that compliance herewith would work an exceptional and unreasonable hardship on him may petition in writing (in triplicate), for relief to the Director setting forth all pertinent facts and the nature of the relief sought. The Director may thereupon take such action as he deems appropriate and such action shall be final.

(k) *Violations.* Any person who wilfully violates any provisions of this order or who by any act or omission falsifies records to be kept or information to be furnished pursuant to this order, or who wilfully conceals a material fact concerning a matter within the jurisdiction of any Department or agency of the United States may be prohibited from receiving or making further deliveries of any material subject to allocation, and such further action may be taken against him as the Director deems appropriate, including recommendations for prosecution under section 35a of the Criminal Code (18 U.S.C. 1940 ed. 80), under paragraph 5 of section 301 of Title III of the Second War Powers Act, and under any and all other applicable laws.

(l) *Communications to the Department of Agriculture.* All communications concerning this order shall, unless otherwise directed, be addressed to Director of Food Distribution, United States Department of Agriculture, Washington, D. C., Ref: FD 38.

(m) *General Preference Order M-59 superseded.* This order supersedes in all respects General Preference Order M-59 of the War Production Board (7 F.R. 2186) except that as to violations of said order or rights accrued, liabilities incurred or appeals taken under said order prior to the effective date hereof, said general preference order shall be deemed to be in full force and effect for the purpose of sustaining any proper suit, action, or other proceeding with respect to any such violation, right or liability. Any appeal pending under the said General Preference Order shall be considered under paragraph (j) hereof.

(n) *Territorial extent.* This order applies to all persons in the United States, its territories and possessions, and the District of Columbia.

(o) *Effective date.* This order shall be effective on March 24, 1943, as of 12:01 a. m., e. w. t.

(E.O. 9280, 7 F.R. 10179)

Issued this 19th day of March 1943.

[SEAL] PAUL H. APPLEBY,
Acting Secretary of Agriculture.

FAT AND OIL USE
FDO-42

[FDO 42, Amdt. 4]

PART 1460—FATS AND OILS

RESTRICTIONS ON USE

Food Distribution Order No. 42, as amended (8 F.R. 13970, 9 F.R. 1687), § 1460.1, is amended to read as follows:

§ 1460.1 *Use of fats and oils*—(a) *Definitions.* (1) "Fats and oils" means all the raw, crude, refined, and pressed fats and oils, whether vegetable, animal, fish, or other marine animal, their by-products and derivatives, including foots, grease (lard) oil, sulfonated and similarly processed fats and oils, fatty acids, lard and rendered pork fat, and the fat and oil content of any other product, but not including cocoa butter, butter, wool (grease) fat, essential oils, tall oil, mineral oils, and vitamin bearing oils derived from fish or other marine animal livers or viscera.

(2) "Person" means any individual, partnership, association, business trust, corporation, or any organized group of persons whether incorporated or not.

(3) "Manufacturer" means any person who uses any fats or oils in the manufacture of any "finished product," and shall include all other persons directly controlling or controlled by such person and all persons under direct or indirect common control with such person. The term shall also include a "soap converter," but shall not include any crusher, renderer, refiner, or other processor except as and to the extent that his operations result in the production of a finished product, or any person who uses fats and oils in the home in the preparation of food for household consumption. A person who merely blends fats and oils shall not be deemed a manufacturer.

(4) "Soap converter," means any person who uses soap made by others as a raw material, and by the addition of other materials, including, but not limited to, silicates, phosphates, abrasives, borax, corn meal, and soda ash, makes a finished product which is sold for detergent uses. The term shall not include those persons who merely add small amounts of color or perfume to the original soap, or persons who merely dissolve paste or other soaps in water to make liquid soaps, without adding other non-soap detergent materials.

(5) "Finished product" means any product produced by a manufacturer for sale as his finished product and carried on his books as his finished product; or any product listed under Schedule A hereof produced by a manufacturer for his own consumption, except an intermediate product used by him in the manufacture of another product listed under said Schedule A. However, the term shall not include:

(i) Lard or rendered pork fat;

(ii) Any fat or oil product intended for sale to another manufacturer for further processing in the manufacture of, or for inclusion in, any product listed under Schedule A hereof (excepting an edible product of which fats and oils are not the principal ingredient);

(iii) Any edible product of which fats and oils are not the principal ingredient;

(iv) Any edible product produced by any hotel or restaurant for consumption on the premises;

(v) Any medicinal preparation, other than medicinal soap, or any product used in the manufacture of such a medicinal preparation;

(vi) Any vitamin preparation or any product used in the manufacture of a vitamin preparation;

(vii) Olive oil;

(viii) Poultry fat; or

(ix) Soap intended for sale to soap converters for further processing.

(6) "Crusher" means any person who presses, expels, or extracts oils from any seed, bean, nut, or corn or other oil-bearing materials.

(7) "Principal ingredient" means the largest single ingredient by weight, subject to the qualification that mayonnaise and salad dressing are to be considered products of which fats and oils are not the principal ingredient regardless of the composition thereof.

(8) "Soap" means the water soluble product formed by the saponification or neutralization of fats, oils, rosins, or their fatty acids with organic, sodium or potassium bases; or any detergent composition containing such products, including all types of shaving soap and shaving cream. The term does not include, however, soap used for non-detergent purposes or for the processing of textiles.

(9) "Non-detergent purposes" means uses in which the function of the soap is not to clean, wash, scour, or remove dirt, grit, grease, or any other foreign material from any surface, material, assembly, part or product.

(10) "Package and bar soap" means all bar soap, and all other soap, except abrasive hand soaps, originally packed in unit packages containing less than 25 pounds net.

(11) "Bulk package soap" means any soap except bar soap, and abrasive hand soaps, which is originally packaged in unit packages containing 25 pounds net, or more.

(12) "Abrasive hand soap" means paste and powdered soap products sold regularly for the removal of soil from the human skin and which contain, by weight, on a moisture free basis, not less than 10 per cent or more than 40 per cent anhydrous soap, and not less than 25 per cent abrasive material of

an organic or inorganic nature, to facilitate soil removal.

(13) "Foots" means the by-product residue obtained in the refining of any fat or oil, except linseed oil, where such refining is accomplished by treatment of such fat or oil with any alkaline material.

(14) "Washed, recovered linseed oil' means the by-product residue obtained in the refining of linseed oil where such refining is accomplished by treatment of linseed oil with any alkaline material.

(15) "Can" means a can as defined in Conservative Order M-81, as amended (9 F.R. 82).

(16) "Base period" means the calendar years 1940 and 1941.

(17) "Director" means the Director of Food Distribution, War Food Administration.

(b) *Restrictions on manufacture.* (1) No manufacturer, except as hereinafter provided, shall, in any calendar quarter, use or consume fats and oils in any class of use listed in Schedule A below, in a quantity in excess of a quota equal to the percentage specified for such calendar quarter in said Schedule A of his average quarterly use or consumption of fats and oils in such class of use during the corresponding calendar quarters of the base period: *Provided, however,* That any person who manufactured paste water paint, dry casein paint, or dry protein paint, as such in the base period, may, in any calendar quarter, for the sole purpose of manufacturing paint containing not more than one pound of fats and oils per gallon of paint, use a quantity of fats and oils equal to the percentage specified for such calendar quarter in said Schedule A of an amount of fats and oils computed on the basis of one pound of fats and oils for each gallon of his average quarterly production of paste water paint during the corresponding calendar quarters of the base period, and one pound of fats and oils for each eight pounds of his average quarterly production of dry casein or dry protein paint during the corresponding calendar quarters of the base period.

SCHEDULE A

Class of use:	Permitted percentage
Manufacture of margarine in any calendar quarter	167
Manufacture of other edible finished products, including shortening, in any calendar quarter	88
Manufacture of package and bar soap in any calendar quarter	90
Manufacture of bulk package soap in any calendar quarter	110
Manufacture of abrasive hand soap in any calendar quarter	150
Manufacture of paints, varnishes, lacquers, and other protective coatings in any calendar quarter except the calendar quarter beginning on January 1, 1944	60
Maufacturer of paints, varnishes, lacquers, and other protective coatings in the calendar quarter beginning on January 1, 1944	70
Manufacture of linoleum, oilcloth (for floor coverings), and felt base floor coverings in any calendar quarter except the calendar quarter beginning on January 1, 1944	60
Manufacture of linoleum, oilcloth (for floor coverings), and felt base floor coverings in the calendar quarter beginning on January 1, 1944	70
Manufacture of oilcloth (for all purposes other than floor coverings) and all other coated fabrics in any calendar quarter except the calendar quarter beginning on January 1, 1944	60
Manufacture of oilcloth (for all purposes other than floor coverings) and all other coated fabrics in the calendar quarter beginning on January 1, 1944	70
Manufacture of paint containing not more than one pound of fats and oils per gallon of paint (by a manufacturer of paste water paint, dry casein paint, or dry protein paint, as such, in the base period), in any calendar quarter except the calendar quarter beginning on January 1, 1944	60
Manufacture of paint containing not more than one pound of fats and oils per gallon of paint (by a manufacturer of paste water paint, dry casein paint, or dry protein paint, as such, in the base period), in the calendar quarter beginning on January 1, 1944	70

(2) If any manufacturer does not, in any calendar quarter use or consume the quantity of fats and oils permitted by paragraph (b) (1) hereof when computed in accordance with the provisions of this order, the unused part of his quota for such quarter (beginning with the second quarter of 1943) may, for the purposes of paragraph (b) (1), be carried forward and used only in the succeeding calendar quarter and then only after the regular quota for such quarter has been used.

(3) For the purpose of determining the quantity of raw "foots" or "washed, recovered linseed oil" which may be used or consumed, use or consumption shall be calculated on the basis of total fatty acid content.

(4) The restrictions on the use or consumption of fats and oils imposed hereby are imposed with respect to the use or consumption of fats and oils in the aggregate, and such restrictions are not to be construed to limit a manufacturer to the use or consumption of the same fat or oil used or consumed by him in the base period.

(5) Nothing in paragraph (b) (1) hereof shall restrict:

(i) The use or consumption of fats and oils, in any calendar quarter, by any manufacturer, who was using fats or oils prior to July 1, 1943, and whose total use or consumption of fats and oils in such calendar quarter in classes of use listed under Schedule A hereof is not more than 10,000 pounds, exclusive of fats and oils used or consumed pursuant to the provisions of paragraphs (b) (5) (ii), (iii), iv), or (v) hereof; or the use or consumption of fats and oils in any calendar quarter by any manufacturer, whose use of fats and oils did not commence until on or after July 1, 1943, and whose total use or consumption of fats and oils in such calendar quarter in classes of use listed under Schedule A hereof is not more than 1000 pounds, exclusive of fats and oils used or consumed pursuant to paragraphs (b) (5) (ii), (iii), (iv), or (v) hereof.

(ii) The use or consumption of fats and oils in the manufacture of the following products, delivered, or contracted for delivery, to the persons, or agencies, and for the specific purposes, if any, listed below:

(a) Any edible product or soap to the Army, Navy, Marine Corps, or Coast Guard of the United States; the Office of Distribution, War Food Administration (including, but not restricted to the Federal Surplus Commodities Corporation); the War Shipping Administration; or the Veterans' Administration.

(b) Any edible product or soap to a contract school in accordance with the provisions of Food Distribution Regulation 2, as amended (8 F.R. 13879), or a ship supplier in accordance with the provisions of Food Distribution Regulation 3 (8 F.R. 13880);

(c) Any soap to any person for the purpose of using such soap in laundering under contract with the Army, Navy, Marine Corps, or Coast Guard of the United States, the War Shipping Administration, the United States Maritime Commission, a ship operator as defined in said Food Distribution Regulation 3, or a contract school as defined in said Food Distribution Regulation 9 as amended; or,

(d) Any finished product to any person for use in the manufacture of any edible product delivered or to be delivered to any of the agencies or persons named in (a) or (b) of this paragraph (b) (5) (ii):

Provided, however, That although delivery of a product pursuant to this paragraph (b) (5) (ii) may be made to the persons or agencies heretofore named in this paragraph through intermediate distributors, any delivery so made through intermediate distributors; or any delivery, direct or otherwise, made to the persons named in (c) or (d) of this paragraph (b) (5) (ii), will not cause the use or consumption of fats and oils in the manufacture of the product so delivered, to be exempt from the provisions of paragraph (b) (1) hereof, unles and until a certificate, or certified copy thereof, is issued, endorsed, and delivered to the person claiming such exemption, in connection with such delivery, as follows: The certificate shall state the name of the person making delivery, or to make delivery, of the final product, the name of the manufacturer of the final product, the amount and kind of final product delivered, or to be delivered, and that the person or agency to which delivery has been, or is to be, made has either received the amount of final product covered by the certificate, or has contracted for such delivery. If delivery has been made, or is to be made, to a person pursuant to (c) of this paragraph (b) (5) (ii), the certificate shall also state the purpose for which the final product covered thereby is to be used. The foregoing certificate shall be signed by an authorized officer, or official, of the agency receiving, or to receive, the final product, or if the final product has been received, or is to be received, by a private person, the certificate shall be signed by such person or his authorized agent. The certificate shall be delivered to the person who made, or is to make, delivery, and such person, if he did not, or will not, manufacture the product covered by the certificate, shall deliver it promptly by mail, or otherwise, to the manufacturer of the final product named thereon. Promptly upon receipt of the certificate the manufacturer of the final product named thereon shall execute and sign an endorsement thereon showing the amount of fats and oils used, or to be used, in the manufacture of the amount

of final product covered by the certificate. In addition thereto, if such person used, or is to use, any finished product delivered, or to be delivered, to him pursuant to (d) of this paragraph (b) (5) (ii), in the manufacture of the final product covered by the certificate, he shall set forth in the endorsement the name of the person so supplying, or to supply, him with such finished product and the amount and kind of the finished product delivered, or to be delivered, by such supplier for such purpose. The manufacturer of the final product shall then make a copy of the certificate and endorsement thereon, certified by him to be true and correct, and deliver such copy promptly, by mail, or otherwise, to such supplier. However, the manufacturer of the final product may, in making the copy for any particular supplier, delete the data concerning suppliers other than the supplier to whom the copy is to be delivered, and insert in lieu thereof the following: "Data concerning other suppliers has been deleted." *It is further provided*, That the use or consumption of fats and oils in the manufacture of a finished product to be delivered directly to any agency or person named in (a) or (b), of this paragraph (b) (5) (ii), shall not be exempt from the provisions of (b) (1) hereof, unless and until the person claiming such exemption shall have entered into a contract with such agency or person to deliver such finished product.

(iii) The use or consumption of fats and oils in the manufacture of all protective coatings, coated fabrics, linoleum, oilcloth, and felt base floor coverings, delivered or to be delivered to, or used on or incorporated in material and equipment delivered or to be delivered to, the Army, Navy, Marine Corps, or Coast Guard of the United States, the United States Maritime Commission, or to the War Shipping Administration, or delivered or to be delivered, pursuant to the Act of March 11, 1941 (Lend-Lease Act), or to be used on a vessel operating under a warrant issued by the United States Maritime Commission or the War Shipping Administration, pursuant to the Act of July 14, 1941 (55 Stat. 591): *Provided, however*, That no fats or oils used or consumed pursuant to the terms of this paragraph (b) (5) (iii) by any manufacturer shall be exempt from such manufacturer's quota under the terms of this order unless, on or before the 15th day of the month succeeding the month in which the fats and oils were so used, he shall mail to the Director a report of such use on Form FDA-523, as amended, or such other forms as the Director may prescribe.

(iv) The use or consumption of fats and oils in the manufacture of edible finished products and soaps to be exported to the Dominion of Canada where such Dominion has granted a license for the importation of such products, or to any other country purusant to an export license issued by the Foreign Economic Administration.

(v) The use or consumption of fats and oils in the manufacture of protective coatings which are:

(a) Applied to any item of new farm machinery or equipment which is listed in Schedule A of Limitation Order L-257, as amended (8 F.R. 15568), if such protective coatings are applied by the manufacturer of such machinery or equipment, or,

(b) Used as, or in the manufacture of, cans, container closures, closure liners, or linings and liners for cans, if such cans, container closures, closure liners, or linings and liners for cans are used only for the packaging of food, drugs, pharmaceuticals and beverages.

(6) A manufacturer's use or consumption of fats and oils in accordance with the provisions of paragraphs (b) (5) (ii), (iii), (iv), or (v), hereof, shall not be charged against his quota under paragraph (b) (1) hereof, and any fats or oils used or consumed by a manufacturer in the base period for any purpose set forth in paragraphs (b) (5) (ii), (iii), or (v) hereof, or, in the manufacture of edible finished products or soap for exportation to a foreign country shall be excluded in determining his quota under paragraph (b) (1) hereof.

(7) A person who acquires all the manufacturing facilities of another person in a particular class of use shall thereby become entitled to the quota of such other person in such class of use, whether or not he continues to operate such facilities in whole or in part: *Provided, however*, That he shall within 30 days following such acquisition inform the Director of the facilities acquired, their location, whether or not operation will be continued in the same or another location, and the amount of quota which he claims to have acquired in each class of use.

(8) Fats and oils owned by one person, which are processed by another person, shall be charged against the quota of the owner and not the processor: *Provided, however*, That the title to the product resulting from the processing shall remain in the owner of the fats and oils and such owner shall market the product and shall invoice and collect for such product through his own organization, and the processor shall not buy directly or indirectly any product so produced. Otherwise, such fats and oils shall be chargeable against the quota of the processor.

(9) Notwithstanding the other provisions of this order, any manufacturer may, for the purpose of determining his permissible use of fats and oils in the manufacture, during any calendar quarter, of a particular class of soap set forth in Schedule A hereof, divert a quantity of fats and oils from the average quarterly amount of fats and oils used by him in the corresponding calendar quarters of the base period in the manufacture of another class of soap listed in said Schedule A, to the average quarterly amount of fats and oils used by him in the corresponding quarters of the base period in the manufacture of the class of soap with respect to which the determination is being made: *Provided*, That the total amount so diverted from all classes of soap to other classes of soap, for the purpose of determining the quotas applicable to a particular calendar quarter, shall not exceed 250,000 pounds, and his total permitted use of fats and oils for all classes of soap manufacture in any calendar quarter computed after such diversion or diversions shall not exceed (but may be less than) his total permitted use of fats and oils in the manufacture of soap of all classes when computed prior to such diversion or diversions

(10) Notwithstanding the other provisions of this order, only 50 per cent of the washed, recovered linseed oil used or consumed by a manufacturer in any calendar quarter in a class of use listed in Schedule A hereof, shall be charged against his quota hereunder for such class of use in such quarter, and only 50 per cent of the washed, recovered linseed oil used or consumed by a manufacturer, in any calendar quarter, in classes of use listed in Schedule A hereof, shall be counted in determining whether the provisions of paragraph (b) (5) (i) hereof, are applicable to such manufacturer in such quarter.

(c) *Existing contracts.* The restrictions of this order shall be observed without regard to existing contracts or any rights accrued or payments made thereunder.

(d) *Records and reports.* (1) Each manufacturer, other than a soap converter, who, in any calendar quarter, uses or consumes more than a total of 6000 pounds of fats and oils, shall properly fill out and file with the Bureau of the Census, Washington 25, D. C., each of the following reports at the time set forth below:

(i) Bureau of the Census Form BM-1, or such other form or forms as may be prescribed by the Director, for each month of such calendar quarter, on or before the fifteenth day of the month succeeding such month; and

(ii) Bureau of the Census Form BM-2 or such other form or forms as may be prescribed by the Director, for such calendar quarter, on or before the fifteenth day of the second month of the succeeding calendar quarter.

In filling out the foregoing forms the specific instructions contained in any other Food Distribution Order with respect to a particular fat and oil shall be followed. Nothing in this paragraph (d) (1) shall be construed as requiring any person to file more than one form BM-1 for any month, or more than one form BM-2 for any calendar quarter.

(2) The Director shall be entitled to obtain such information from, and require such reports and keeping of such records by, any person, as may be necessary or appropriate, in his discretion, to the enforcement or administration of the provisions of this order.

(3) Every person subject to this order, shall for at least two years (or for such period of time as the Director may designate), maintain an accurate record of his transactions in fats and oils and keep all certificates and endorsements or copies thereof required by the order to support any claim for quota exemption made by him, including all certificates received by him pursuant to the provisions of said Food Distribution Regulation 2, as amended, and said Food Distribution Regulation 3. All statements contained in such certificates or endorsements shall be deemed representations to an agency of the United States.

(4) The record-keeping and reporting requirements of this order have

been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942. Subsequent record-keeping or reporting requirements will be subject to the approval of the Bureau of the Budget pursuant to the Federal Reports Act of 1942.

(e) *Audits and inspection.* The Director shall be entitled to make such audit or inspection of the books, records and other writings, premises or stocks of fats and oils of any person, and to make such investigations, as may be necessary or appropriate, in his discretion to the enforcement or administration of the provisions of this order.

(f) *Petition for relief from hardship.* Any person affected by this order who considers that compliance herewith would work an exceptional and unreasonable hardship on him, may file a petition for relief in writing with the Director, addressed as follows: Director of Food Distribution, War Food Administration, Washington 25, D. C., Ref. FDO 42. Such petition shall set forth all pertinent facts and the nature of the relief sought. The Administrator of this order shall then act upon the petition. In the event that the petitioner is dissatisfied with the action taken by the Administrator of this order, he may request a review of such action by the Director whose decision with respect to the relief sought shall be final.

(g) *Violations.* The War Food Administrator may, by suspension order, prohibit any person who violates any provision of this order from receiving, making any deliveries of, or using fats and oils, or any other material subject to priority or allocation control by the War Food Administrator, and may recommend that any such person be prohibited from receiving, making any deliveries of, or using materials subject to the priority or allocation control of other governmental agencies. In addition, any person who wilfully violates any provision of this order is guilty of a crime and may be prosecuted under any and all applicable laws. Further, civil action may be instituted to enforce any liability or duty created by, or to enjoin any violation of, any provision of this order.

(h) *Communications.* All reports required to be filed hereunder and all communications concerning this order shall, unless instructions to the contrary are issued by the Director, or otherwise provided herein, be addressed to the Director of Food Distribution, War Food Administration, Washington 25, D. C., Ref. FDO 42.

(i) *Delegation of authority.* The administration of this order and the powers vested in the War Food Administrator, insofar as such powers relate to the administration of this order, are hereby delegated to the Director. The Director is authorized to redelegate any or all of the authority vested in him by this order to any employee of the United States Department of Agriculture.

(j) *Territorial extent.* This order shall apply only in the forty-eight States of the United States and the District of Columbia.

(k) *Effect of other orders.* Insofar as any other order of the Secretary of Agriculture, the War Food Administrator, or the Director, heretofore or hereafter issued, limits or curtails to a greater extent than herein provided the use, acquisition, or disposition of any fat or oil, the limitations of such other order shall control.

(l) *Effective date.* This amendment shall become effective at 12:01 a. m., e. w. t., March 17, 1944. However, with respect to violations of Food Distribution Order No. 42, as amended, or rights accrued, or liabilities incurred thereunder, prior to said date, said Food Distribution Order No. 42, as amended, shall be deemed in full force and effect for the purpose of sustaining any proper suit, action, or other proceeding with respect to any such violation, right, or liability. (E.O. 9280, 7 F.R. 10179; E.O. 9322, 8 F.R. 3807; E.O. 9334, 8 F.R. 5423; E.O. 9392, 8 F.R. 14783)

Issued this 16th day of March 1944.

ASHLEY SELLERS,
Assistant War Food Administrator.

HIGH LAURIC ACID OILS
FDO-43

PART 1460—FATS AND OILS
[FDO 43]

RESTRICTIONS ON USE, PROCESSING, SALE, AND DELIVERY OF COCOANUT, BABASSU, PALM KERNEL, AND OTHER HIGH LAURIC ACID OILS

Pursuant to authority vested in me by Executive Order No. 9280, dated December 5, 1942, and to assure an adequate supply and efficient distribution of cocoanut, babassu, palm kernel, and other high lauric acid oils to meet war and essential civilian needs, *It is hereby ordered*, As follows:

§ 1460.10 *Use, processing, sale, and delivery of cocoanut, babassu, palm kernel, and other high lauric acid oils restricted.*—(a) *Definitions.* When used in this order, unless otherwise distinctly expressed or manifestly incompatible with the intent thereof:

(1) The term "high lauric acid oils" means cocoanut oil, babassu oil, palm kernel oil, and all other oils having a lauric acid content of thirty-five per cent (35%) or higher, whether crude, refined, bleached, or deodorized.

(2) The term "person" means any individual, partnership, corporation, association, or other business entity.

(3) The term "Director" means the Director of Food Distribution, United States Department of Agriculture, or any employee of the United States Department of Agriculture designated by such Director.

(b) *Prohibited uses.* The use or consumption by any person of high lauric acid oils in the following manufactures, processes, or uses is prohibited:

(1) Any manufacture, process, or use in which glycerine is not produced;

(2) Any manufacture or process in which glycerine is produced, where the recovery of glycerine does not meet the requirements of Food Distribution Order No. 33. (8 F.R. 3475)

(c) *Permitted uses.* (1) Any person may use or consume high lauric acid oils without regard to the restrictions imposed by paragraphs (b) (1) and (b) (2) hereof, in the following instances:

(i) Where the total use or consumption of high lauric acid oils by any person is less than 3,000 pounds in each of the several three month periods of the year commencing January 1, April 1, July 1, and October 1; or

(ii) Where any person uses or consumes Tucum and Muru-muru oils in the manufacture of any edible product, without limitation on such use or consumption: *Provided*, That such use or consumption shall be subject to the provisions of paragraph (f) hereof.

(2) Notwithstanding the provisions of paragraphs (c) (1) (i) and (ii) hereof, no person shall use or consume high lauric acid oils in the manufacture of any margarine, shortening, or cooking fats.

(d) *Reports of unusable oils.* Any high lauric acid oils at any time remaining in the hands of any person which, by reason of any of the provisions of paragraphs (b) (1) and (2) and (c) (1) (i), (ii) and (2) hereof, may not be used or consumed by him, shall be reported to the Director.

(e) *Restrictions on processing.* After the effective date of this order, no person shall process or change the condition of any high lauric acid oils in preparation for any manufacture or use permitted by this order, except to the extent necessary for such preparation, and then only in such quantities as may be necessary to meet his normal production schedule or, if such oils are to be manufactured or used by another person, then the normal production schedule of such other person.

(f) *Withholdings of high lauric acid oils.* Every person who was required by General Preference Order M-60 (7 F.R. 2185) of the War Production Board to set aside an inventory quota shall use, put in process, sell, or deliver, all or any part of such inventory quota only upon express instruction of the Director: *Provided*, That this paragraph (f) shall not be construed to prevent crushing of copra or other seeds or nuts, or to prevent changing the condition of such oil so set aside to the extent necessary to prevent deterioration while carried in inventory. Such quota shall be held subject to the direction of the Director.

(g) *Restrictions on sales and deliveries.* No person shall sell or, directly or indirectly, deliver, or cause to be delivered, any high lauric acid oils for any use prohibited by paragraphs (b) (1) and (2), and (c) (1) (i), (ii) and (2) hereof or in violation of paragraph (f) hereof; and no person shall accept deliveries of any high lauric acid oils for any prohibited use or for any greater quantities or proportions than permitted for consumption.

(h) *Intra-company transactions.* The prohibitions or restrictions contained in this order with respect to deliveries shall, in the absence of a contrary direction, apply not only to deliveries to other persons, including affiliates and subsidiaries, but also to deliveries from one branch, division, or section of a single enterprise to another branch, division, or section of the same or any other enterprise owned or controlled by the same person.

(i) *Existing contracts.* The restrictions of this order concerning the use, processing, sale, and delivery of high lauric acid oils shall be observed without regard to existing contracts or any rights accrued or payments made thereunder.

(j) *Records and reports.* Every person subject to this order shall maintain such records for at least two years (or for such other periods of time as the Director may designate) and shall execute and file such reports upon such forms and submit such information as the Director may from time to time request or direct, and within such times as he may prescribe.

(k) *Bureau of the Budget approval.* The reporting requirements of this order have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942. Subsequent specific record keeping or reporting requirements by the Director will be subject to the approval of the Bureau of the Budget pursuant to the Federal Reports Act of 1942.

(l) *Audits and inspections.* Every person subject to this order shall, upon request, permit inspections of his stocks of cocoanut, babassu, palm kernel, and other high lauric acid oils, and premises used in his business, and all of his books, records, and accounts shall, upon request, be submitted to audit and inspection by the Director.

(m) *Petition for relief from hardship.* Any person affected by this order who considers that compliance herewith would work an exceptional and unreasonable hardship on him, may petition in writing (in triplicate) for relief to the Director, setting forth all pertinent facts and the nature of the relief sought. The Director may thereupon take such action as he deems appropriate and such action shall be final.

(n) *Violations.* Any person who willfully violates any provision of this order or who by any act or omission falsifies records to be kept or information to be furnished pursuant to this order or wilfully conceals a material fact concerning a matter within the jurisdiction of any Department or agency of the United States may be prohibited from receiving or making further deliveries of any material subject to allocation; and such further action may be taken against him as the Director deems appropriate, including recommendations for prosecution under section 35a of the Criminal Code (18 U.S.C. 1940 ed. 80), under paragraph 5 of section 301 of Title III of the Second War Powers Act, and under any and all other applicable laws.

(o) *Communications to the Department of Agriculture.* All reports required to be filed hereunder and all communications concerning this order shall, unless otherwise directed, be addressed to: Director of Food Distribution, United States Department of Agriculture, Washington, D. C., Ref.: FD 43.

(p) *General Preference Order M-60 of the War Production Board superseded.* This order supersedes in all respects General Preference Order M-60 (7 F.R. 2185) of the War Production Board, except that as to violations of said order or rights accrued, liabilities incurred, or appeals taken under said order prior to the effective date hereof, said General Preference Order M-60 shall be deemed in full force and effect for the purpose of sustaining any proper suit, action, or other proceeding with respect to any such violation, right, or liability. Any appeal pending under said order shall be considered under paragraph (m) hereof.

(q) *Territorial extent.* This order applies to all persons in the United States, its territories and possessions, and the District of Columbia.

(r) *Effective date.* This order shall be effective on April 1, 1943, as of 12:01 a. m., e. w. t.

(E.O. 9280, 7 F.R. 10179)

Issued this 31st day of March 1943.

[SEAL] CLAUDE R. WICKARD,
Secretary of Agriculture.

FISH OIL
FDO-60

[FDO 60, Amdt. 2]

PART 1460—FATS AND OILS

FISH OIL

Food Distribution Order 60, as amended (8 F. R. 14785), § 1460.16, is amended to read as follows:

§ 1460.16 *Use, consumption, and processing of fish oil restricted*—(a) *Definitions.* (1) "Fish oil" means oil, other than oil produced solely from the livers or viscera of fish or marine animals, produced by the reduction of the whole or any part of any fish or marine animal of the following species, commonly known as: California sardine or Pacific Coast pilchard (Sardina caerulea), menhaden (Brevoortia tyrannus), Pacific Coast herring (Clupea pallasii), West Coast mackerel (Scomber diego), Tuna and tuna-like fish, salmon (Genus: Oncorhynchus), rose fish (Sebastes marinus), and seal. The term shall include all such oil, whether crude, refined, pressed, sulphonated or otherwise processed; and all the by-products and derivatives of such oil, including, but not limited to, foots, stearine, and fatty acids, but excluding pitch.

(2) "Person" means any individual, partnership, association, business trust, corporation, or any organized group of persons, whether incorporated or not.

(3) "Quota period" means the twelve-month period beginning on October 1, of any year and ending on September 30, of the following year. For the purposes of this order, the first quota period shall begin on October 1, 1943.

(4) "Calendar quarter" means the several three-month periods of the year beginning on January 1, April 1, July 1, and October 1. With respect to the restrictions of this order, the first calendar quarter shall begin on October 1, 1943.

(5) "Director" means the Director of Food Distribution, War Food Administration.

(b) *Restrictions on use and consumption.* Except as provided for in paragraph (c) hereof, no person shall, in any manner, use or consume fish oil (other than in the production of fish oil as defined in paragraph (a) (1) hereof), or use or consume a product containing fish oil in a class of use listed in Schedules A or B of paragraph (c) hereof, unless and except as specifically authorized by the Director.

(c) *Exceptions.* Notwithstanding the provisions of paragraph (b) hereof, specific authorization by the Director shall not be required for:

(1) The use or consumption by any person, in any quota period, of fish oil, or any product containing fish oil, in any class of use listed in Schedule A below, in a quantity not in excess of a quota equal to the percentage specified in such Schedule A of the amount of fish oil (including the amount of fish oil contained in any product) used or consumed by such person in such class of use during the calendar year of 1942.

SCHEDULE A

Class of use:	*Permitted percentage*
Manufacture of shortening	60
Manufacture of water soluble soaps	60
Manufacture of linoleum, felt base floor covering, and oil cloth used for floor covering	60
Manufacture of oil cloth for all purposes other than floor coverings, and all coated fabrics	60

A quota established hereunder for one class of use may not be transferred to another class of use. For the purposes of this paragraph (c) (1), the term "fish oil" shall not include seal oil or Pacific Coast herring oil.

(2) The use or consumption by any person, in any calendar quarter, of fish oil, or any product containing fish oil, in any class of use listed in Schedule B below, in a quantity not in excess of a quota equal to the percentage specified in such Schedule B of the amount of fish oil (including the amount of fish oil contained in any product) used or consumed by such person in such class of use during the corresponding calendar quarter of 1942.

SCHEDULE B

Class of use:	*Permitted percentage*
Manufacture of medicinals or pharmaceuticals for human or animal consumption	100
Manufature of natural leather	100
Manufacture of terne plate, galvanized metal, and hot dipped tin	100
Manufacture of caulking compounds and putties	100
Manufacture of paints, varnishes, lacquers, and other protective coatings, except alkyd resins or paint reducing oils	60

A quota established hereunder for one class of use may not be transferred to another class of use. For the purposes of this paragraph (c) (2), the

term "fish oil" shall not include seal oil or Pacific Coast herring oil.

(3) The use or consumption by any person of any fish oil, other than seal oil or Pacific Coast herring oil, in the manufacture of alkyd resins, or as a rubber compounding ingredient in the manufacture of natural or synthetic rubber products.

(4) The use or consumption by any person of seal oil or Pacific Coast herring oil in the manufacture of natural leather.

(5) The use or consumption by any person of any fish oil, other than seal oil, in the manufacture of water insoluble metallic soaps, lubricants, or metal working compounds, other than core oils.

(6) The use or consumption by any person of fish oil, other than seal oil or Pacific Coast herring oil, in the manufacture of vitamin feeding oil to be used for feeding poultry, if such vitamin feeding oil is fortified, by such person, to contain not less than 400 A. O. A. C. units of Vitamin D per gram of oil without regard to the fish-oil content of such oil.

(7) The use or consumption by any person of salmon oil in the manufacture of canned salmon.

(8) The use or consumption of fish oil, other than seal oil, in any calendar quarter, by any person other than a feed manufacturer, who does not use or consume in excess of 1,000 pounds of fish oil during such calendar quarter.

(d) *Restrictions on processing.* Unless and except as specifically authorized by the Director, no person shall process seal oil, except in such a manner as to render it suitable for use or consumption in the manufacturing of natural leather; or Pacific Coast herring oil, except in such a manner as to render it suitable for use or consumption in the manufacture of natural leather, lubricants, water insoluble metallic soaps, or metal working compounds, other than core oil.

(e) *Applications for authorizations.* Every person requiring an authorization to use or consume fish oil in any calendar month shall file an application therefor on or before the fifteenth day of the calendar month preceding the calendar month in which the applicant desires to use or consume the fish oil covered by the application. The application shall be made on Form FDA-478, or such other form or forms as the Director may prescribe, and shall be forwarded to the Director of Food Distribution, War Food Administration, Washington 25, D. C., Ref. FDO-60. The Director may prescribe in each authorization the period of time in which the authorization shall be effective. No person shall take any action pursuant to, or in reliance on, an authorization which has expired.

(f) *FDO-42.* The restrictions of this order shall be construed as being supplemental to the restrictions of Food Distribution Order 42, as amended.

(g) *Records and reports.* (1) Every person who in any calendar quarter uses or consumes more than 6,000 pounds of fish oil shall:

(i) Fill out and file, for each month of such quarter, Bureau of the Census Form BM-1, or such other form or forms as may be prescribed by the Director, with the Bureau of the Census, Washington 25, D. C. The report for each month shall be filed on or before the fifteenth day of the succeeding month.

(ii) Fill out and file for such quarter, Bureau of the Census Form BM-2, or such other form or forms as may be prescribed by the Director, with the Bureau of the Census, Washington 25, D. C. The report for each quarter shall be filed on or before the fifteenth day of the second month of the succeeding quarter.

Nothing in this paragraph (g) (1) shall be construed as requiring any person to file more than one form BM-1 for any month, or more than one form BM-2 for any quarter. The provisions of Food Distribution Order 37, as amended, shall apply to the filling out of Form BM-1 with respect to sperm oil.

(2) Every person who used or consumed more than 4,000 pounds of fish oil, including the fish oil contained in any product, in the calendar year of 1942, in the classes of use set forth in Schedule A of paragraph (c) (1) hereof, shall on or before April 1, 1944, report to the Director, by letter, the amount of fish oil (including the amount of fish oil contained in any product) used or consumed by him in each class of use set forth in said Schedule A, in the calendar year of 1942.

(3) Every person who used or consumed more than 4,000 pounds of fish oil, including the fish oil contained in any product, in the calendar year of 1942, in the classes of use set forth in Schedule B of paragraph (c) (2) hereof, shall on or before April 1, 1944, report to the Director, by letter, the amount of fish oil (including the amount of fish oil contained in any product) used or consumed by him in each class of use set forth in said Schedule B, in each calendar quarter of the calendar year of 1942.

(4) The Director shall be entitled to obtain such information from, and require such reports and keeping of such records by, any person, as may be necessary or appropriate, in his discretion, to the enforcement or administration of the provisions of this order.

(5) Every person subject to this order shall, for at least two years (or for such period of time as the Director may designate), maintain an accurate record of his transactions in fish oil.

(6) The record-keeping and reporting requirements of this order have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942. Subsequent record-keeping or reporting requirements will be subject to the approval of the Bureau of the Budget pursuant to the Federal Reports Act of 1942.

(h) *Audits and inspections.* The Director shall be entitled to make such audit or inspection of the books, records and other writings, premises, or stocks of fish oil of any person, and to make such investigations, as may be necessary or appropriate, in his discretion, to the enforcement or administration of the provisions of this order.

(i) *Petition for relief from hardship.* Any person affected by this order who considers that compliance herewith would work an exceptional and unreasonable hardship on him, may file a petition for relief in writing with the Director, addressed as follows: Director of Food Distribution, War Food Administration, Washington 25, D. C., Ref. FDO 60. Such petition shall set forth all pertinent facts and the nature of the relief sought. The Administrator of this order shall then act upon the petition. In the event that the petitioner is dissatisfied with the action taken by the Administrator of this order, he may request a review of such action by the Director whose decision with respect to the relief sought shall be final.

(j) *Violations.* The War Food Administrator may, by suspension order, prohibit any person who violates any provision of this order from receiving, making any deliveries of, or using fish oil, or any other material subject to priority or allocation control by the War Food Administrator, and may recommend that any such persons be prohibited from receiving, making any deliveries of, or using materials subject to the priority or allocation control of other governmental agencies. In addition, any person who wilfully violates any provision of this order is guilty of a crime and may be prosecuted under any and all applicable laws. Further, civil action may be instituted to enforce any liability or duty created by, or to enjoin any violation of, any provision of this order.

(k) *Communications.* All reports required to be filed hereunder and all communications concerning this order shall, unless instructions to the contrary are issued by the Director, or otherwise provided herein, be addressed to the Director of Food Distribution, War Food Administration, Washington 25, D. C., Ref. FDO 60.

(l) *Delegation of authority.* The administration of this order and the powers vested in the War Food Administrator, insofar as such powers relate to the administration of this order, are hereby delegated to the Director. The Director is authorized to redelegate any or all of the authority vested in him by this order to any employee of the United States Department of Agriculture.

(m) *Territorial extent.* This order shall apply only in the forty-eight States of the United States, the District of Columbia, and the Territory of Alaska.

(n) *Effecive date.* This amendment shall become effective at 12:01 a. m., e. w. t., on March 2, 1944. However, with respect to violations of Food Distribution Order 60, as amended, or rights accrued, or liabilities incurred thereunder, prior to said date, said Food Distribution Order 60, as amended, shall be deemed in full force and effect for the purpose of sustaining any proper

suit, action, or other proceeding with respect to any such violation, right, or liability.

(E.O. 9280, 7 F.R. 10179; E.O. 9322, 8 F.R. 3807; E.O. 9334, 8 F.R. 5423; E.O. 9392, 8 F.R. 14783)

Issued this 2d day of March 1944.

ASHLEY SELLERS,
Assistant War Food Administrator.

. TALLOW AND GREASE INVENTORIES
FDO-67

[FDO 67, Amdt. 2]

PART 1460—FATS AND OILS

INEDIBLE TALLOW OR GREASE

Purusant to the authority vested in the War Food Administrator, Food Distribution Order 67 (8 F.R. 10479), issued by the War Food Administrator on July 26, 1943, is amended to read as follows:

§ 1460.27 *Restrictions relating to inedible tallow or grease*—(a) *Definitions.* (1) "Inedible tallow or grease" means all grades and qualities of inedible animal tallows, greases, and stearines produced therefrom; excluding garbage grease, wool (grease) fat, grease (lard) oil, neat's foot oil and stock, stearic acid, and red oil.

(2) "Person" means any individual, partnership, association, business trust, corporation, or any organized group of persons whether incorporated or not.

(3) "Producer" means any person whose operations result in the production of inedible tallow or grease or a mixture of such products in any form.

(4) "Dealer" means any person who purchases inedible tallow or grease, or mixture of the same, in any form for resale, or who blends or mixes any such products so purchased for resale.

(5) "Manufacturer" means any person who uses inedible tallow or grease in the manufacture of any other product. For the purposes of this order, mixed fatty acids shall be considered as another product.

(6) "Inventory" means all quantities of inedible tallow or grease, owned by a manufacturer, dealer, or producer, and all of the inedible tallow or grease for which he holds a contract for delivery in the future; less the amount of inedible tallow or grease as such, which he has sold but not delivered. The term shall include all inedible tallow or grease, in process up to the point at which it ceases to exist as such, by reason of saponification, neutralization, pressing, distillation, or compounding with nonfatty materials.

(7) "Director" means the Director of Food Distribution, War Food Administration.

(8) "Soap" means the water soluble product formed by the saponification or neutralization of fats, oils, rosins, or their fatty acids with organic, sodium or potassium bases, or any detergent composition containing such products.

(9) "Base period" means the period beginning on October 1, 1942 and ending on March 31, 1943.

(10) "Base period production" means the aggregate quantity of inedible tallow or grease produced by a producer during the base period.

(11) "Base period deliveries" means the total quantity of inedible tallow or grease delivered by a dealer to other persons during the base period.

(12) "Base period use" means, with respect to a manufacturer for whom a base period use has not been established under the provisions of paragraph (g) hereof, the total quantity of inedible tallow or grease used by such manufacturer during the base period, or, with respect to a manufacturer for whom a base period use has been established by the Director under the provisions of paragraph (g) hereof, the amount of inedible tallow or grease so established by the Director.

(13) "Commercial quantity" means a tank car, a tank truck, a carload of packages, or a truck load of packages.

(14) "Maximum unit" means the largest, single, segregate, commercial quantity of inedible tallow or grease which a person accepted delivery of during the base period.

(15) "Month" means calendar month.

(16) "Continental United States" means the forty-eight States of the United States and the District of Columbia.

(b) *Restrictions on aceptance of delivery.* (1) Subject to the provisions of paragraph (e) hereof, and except as provided for in paragraph (c) hereof, no manufacturer, other than a manufacturer of soap, shall accept delivery of inedible tallow or grease, unless and except as specifically authorized by the Director.

(2) Applications for authorization to accept delivery of inedible tallow or grease pursuant to the provisions of paragraph (b) (1) hereof, shall be filed on Form FDA-478 with the Chief, Fats and Oils Branch, Food Distribution Administration, War Food Administration, Washington 25, D. C., Ref. FDO-67, on or before the fifteenth day of the month preceding the month in which such acceptance of delivery is to be made.

(3) Every manufacturer who has received an authorization pursuant to paragraph (b) (1) hereof to accept delivery of inedible tallow or grease shall attach to, or include in his purchase order for such inedible tallow or grease a certificate in the following form, properly filled out and executed:

The undersigned hereby certifies to the War Food Administration and to.....
(supplier)
that this certificate constitutes a part of an order by him to said supplier for ..... pounds of inedible tallow or grease to be delivered in ..... 19...., that he (month) has been authorized to so accept delivery of such inedible tallow or grease by the Director of Food Distribution, and that such acceptance of delivery by him will not cause his inventory of inedible tallow or grease to exceed the amount he is permitted under the terms of Food Distribution Order 67, as amended.

.....
(Name of purchaser)
By .....
(Authorized official)
.....
(Date)

However, no person shall attach to, or include in, any order for inedible tallow or grease, such a certificate, unless the person giving the order has been authorized by the Director to accept delivery of the inedible tallow or grease covered by the order.

(c) *Exceptions to paragraph (b).* Notwithstanding the provisions of paragraph (b) hereof, specific authorization from the Director shall not be required for the acceptance of delivery of inedible tallow or grease in any month by a manufacturer who does not accept delivery of more than 5,000 pounds of inedible tallow or grease in such month.

(d) *Restrictions on delivery.* No producer or dealer shall deliver inedible tallow or grease during any month to any manufacturer except a manufacturer who has been authorized by the Director to accept delivery under the provisions of paragraph (b) (1) hereof, unless and until he has, before the end of such month, delivered, offered to deliver, or made provision to deliver all inedible tallow or grease which is ordered from him in the period of 20 days immediately prior to the tenth day of such month, by means of any order which is certified in accordance with the provisions of paragraph (b) (3) hereof: *Provided, however,* That no producer or dealer shall be obligated to deliver, offer to deliver, or make provision to deliver on such certified orders in the aggregate, in any month, more inedible tallow or grease than 30 per cent of the total amount of inedible tallow or grease delivered by him in such month, or to make delivery of any quantity of inedible tallow or grease other than a commercial quantity, or in an amount less than the smallest commercial quantity of inedible tallow or grease delivered by him in the base period; and no producer shall be required to deliver, offer to deliver, or make provision to deliver on such certified orders from any one plant operated by him more than 30 per cent of the total deliveries of inedible tallow or grease made by him from such plant in such month.

(e) *Inventory limitations.* Except as provided in paragraph (f) hereof:

(1) No producer shall produce any inedible tallow or grease after the effective date of this amendment which will cause his inventory to exceed an amount equal to 1/12 of his base period production; and

(2) No dealer shall accept delivery of any inedible tallow or grease after the effective date of this amendment which will cause his inventory to exceed an amount equal to 1/12 of his base period deliveries; and

(3) No manufacturer shall after the effective date of this amendment accept delivery of inedible tallow or grease which will cause his inventory

to exceed an amount equal to ½ of his base period use; and

(4) If a person's operations in inedible tallow or grease are such that under the terms of this order he may be classified as two or more of the following, to wit: a producer, a dealer, or a manufacturer, such person shall not produce or accept delivery of any inedible tallow or grease which will cause his inventory to exceed the largest amount he is permitted to have under one of the foregoing paragraphs hereof, to wit: (e) (1), (e) (2), or (e) (3).

(f) *Exceptions to paragraph* (e). Notwithstanding the provisions of paragraph (e) hereof:

(1) Any producer or dealer who is unable to sell his inedible tallow or grease at the applicable ceiling prices established by the Office of Price Administration may increase his inventory above the applicable inventory limitations of paragraph (e) hereof, and a manufacturer may increase his inventory above the applicable inventory limitations of said paragraph (e) by purchases of inedible tallow or grease at prices below the applicable ceiling prices established by the Office of Price Administration: *Provided, however,* That, if a producer or dealer exceeds the applicable inventory limitations of said paragraph (e) by reason of this exception, he shall not thereafter refuse or fail to deliver inedible tallow or grease to buyers offering to purchase at such ceiling prices until his inventory falls within the applicable inventory limitations of said paragraph (e); and no manufacturer whose inventory exceeds the applicable inventory limitations of said paragraph (e) by reason of purchases made pursuant to this paragraph (f) (1) shall buy additional inedible tallow or grease at such ceiling prices until his inventory falls within the applicable inventory limitations of said paragraph (e).

(2) Any dealer may accept delivery of his maximum unit, if, at the time of such acceptance of delivery, his inventory does not exceed an amount equal to 1/24 of his base period deliveries.

(3) Any manufacturer may accept delivery of his maximum unit, if, at the time of such acceptance of delivery, his inventory does not exceed an amount equal to 1/6 of his base period use.

(4) Any manufacturer may accept delivery of inedible tallow or grease which was imported into the continental United States from a foreign country by such manufacturer or his agent, and may also accept delivery of inedible tallow or grease from a governmental agency, if such materials were imported into the continental United States from a foreign country, but if any such acceptance of delivery shall cause his inventory to exceed the applicable inventory limitations of paragraph (e) hereof, he shall not thereafter accept delivery of inedible tallow or grease, which was produced in the continental United States, until his inventory falls within the applicable inventory limitations of said paragraph (e).

(g) *Increases in base period use.* Any manufacturer who did not use inedible tallow or grease in the base period, or whose current requirements for such materials are greater than in the base period, may petition the Director in writing for the establishment of a larger base period use. The petition shall set forth all pertinent facts. Upon receipt of the petition the Director shall ac thereon by either denying any relief or establishing a larger base period use for the petitioner.

(h) *Intra-company deliveries.* The restrictions of paragraphs (e) and (d) hereof, shall apply not only to transactions, involving delivery or acceptance of delivery, between separate persons who are producers, dealers, or manufacturers, including affiliates or subsidiaries, but to delivery by a branch of a single enterprise engaged in the activities of a "producer" to another branch of the same or any other enterprise under common ownership or control, which is engaged in the activities of a "manufacturer," and also to the acceptance of delivery by any such branch engaged in the activities of a "manufacturer."

(i) *Records and reports.* (1) Every person who makes delivery of inedible tallow or grease pursuant to an order which has been certified in accordance with the provisions of paragraph (b) (3) hereof, shall retain such order and the certificate in connection therewith, for a period of at least two years after the date of such delivery.

(2) The Director shall be entitled to obtain such information from, and require such reports and keeping of such records by, any person, as may be necessary or appropriate, in his discretion, to the enforcement or administration of the provisions of this order.

(3) Every person subject to this order shall, for at least two years (or for such period of time as the Director may designate), maintain an accurate record of his transactions in inedible tallow or grease.

(4) The record-keeping and reporting requirements of this order have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942. Subsequent record-keeping or reporting requirements will be subject to the approval of the Bureau of the Budget pursuant to the Federal Reports Act of 1942.

(j) *Audits and inspections.* The Director shall be entitled to make such audit or inspection of the books, records and other writings, premises, or stocks of inedible tallow or grease of any person, and to make such investigations, as may be necessary or appropriate, in his discretion, to the enforcement or administration of the provisions of this order.

(k) *Petition for relief from hardship.* Any person affected by this order who considers that compliance herewith would work an exceptional and unreasonable hardship on him, may file a petition for relief in writing with the Director, addressed as follows: Director of Food Distribution, War Foods Administration, Washington 25, D. C. Reference FDO 67. Such petition shall set forth all pertinent facts and the nature of the relief sought. The Administrator of this order shall then act upon the petition. In the event that the petitioner is dissatisfied with the action taken by the Administrator of this order, he may request a review of such action by the Director whose decision with respect to the relief sought shall be final.

(l) *Violations.* The War Food Administrator may, by suspension order, prohibit any person who violates any provision of this order from receiving, making any deliveries of, or using inedible tallow or grease, or any other material subject to priority or allocation control by the War Food Administrator, and may recommend that any such person be prohibited from receiving, making any deliveries of, or using materials subject to the priority or allocation control of other governmental agencies. In addition, any person who wilfully violates any provision of this order is guilty of a crime and may be prosecuted under any and all applicable laws. Further, civil action may be instituted to enforce any liability or duty created by, or to enjoin any violation of, any provision of this order.

(m) *Delegation of authority.* The administration of this order and the powers vested in the War Food Administrator, insofar as such powers relate to the administration of this order, are hereby delegated to the Director. The Director is authorized to redelegate any or all of the authority vested in him by this order to any employee of the United States Department of Agriculture.

(n) *Communications.* All reports required to be filed hereunder and all communications concerning this order shall, unless instructions to the contrary are issued by the Director, or otherwise provided herein, be addressed to the Director of Food Distribution, War Food Administration, Washington 25, D. C., Reference FDO-67.

(o) *Territorial extent.* This amendment shall apply only in the continental United States.

(p) *Effective date.* This amendment shall become effective at 12:01 a. m., e. w. t., November 20, 1943. However, with respect to violations of said Food Distribution Order 67, or rights accrued, or liabilities incurred thereunder, prior to said date, said Food Distribution Order 67 shall be deemed to be in full force and effect for the purpose of sustaining any proper suit, action, or other preceeding with respect to any such violation, right, or liability.

(E.O. 9280, 7 F.R. 10179; E.O. 9322, 8 F.R. 3807; E.O. 9334, 8 F.R. 5423; E.O. 9392, 8 F.R. 14783)

Issued this 17th day of November 1943.

ASHLEY SELLERS,
Assistant War Food Administrator.

SOAP FORMULAS
FDO-86

[FDO 86]

PART 1460—FATS AND OILS

SOAP

The fulfillment of the requirements of defense of the United States will result in a shortage in the supply of fats and oils and soap for defense, for private account and for export; and the following order is deemed necessary and appropriate in the public interest and to promote the national defense:

§ 1460.30 *Restrictions on the manufacture and distribution of soap*—(a) *Definitions.* (1) "Soap" means the water soluble product formed by the saponification or neutralization of fats, oils, rosins, or their fatty acids with organic, sodium, or potassium bases; or any detergent composition containing such products.

(2) "Total anhydrous soap" means dry soap free from concomitants (including, but not limited to, unsaponifiable matter, glycerine, chlorides, carbonates, free caustic alkalies, and water insoluble material) and free from builders and fillers. The term includes both rosin soap and soap made from fats and oils. The total anhydrous soap content of any soap shall be computed, as of the time of manufacture, on a weight basis and expressed as the percentage which such content bears to the whole soap.

(3) "Soap product" means a kind of soap of a particular type and quality produced by a manufacturer during the 30-day period ending July 17, 1942, or a kind of soap of a particular type and quality offered for sale by a manufacturer in such period which was not produced in such period but which was produced by him prior to such period.

(4) "Base period" means, with respect to any soap product, the 30-day period ending July 17, 1942, or if the soap product was offered for sale in said 30-day period by a manufacturer but was not produced therein and was produced prior thereto by him, it means the most recent period prior thereto when such product was produced by him.

(5) "Base anhydrous soap content" means the anhydrous soap content derived from fats and oils only which was present in a soap product as produced in the base period. The base anhydrous soap content shall be computed, as of the time of manufacture, on a weight basis and expressed as the percentage which such content bears to the whole soap.

(6) "Fats and oils" means all the raw, crude, refined, and pressed fats and oils, whether vegetable, animal, fish, or other marine animal, including grease (lard) oil, sulfonated and similarly processed fats and oils, fatty acids, lard, and rendered pork fat, but not including butter, wool (greases) fats, essential oils, whole tall oil, mineral oils, and vitamin-bearing oils derived from fish or other marine animal livers or viscera.

(7) "Rosin" means the common resin obtained from trees of the pine family and includes gum rosin, wood rosin, hydrogenated rosin, polymerized rosin, rosin or abietic acid separated from tall oil, and crude or refined tall oil as such.

(8) "Builders" mean water soluble alkaline compounds except sodium and potassium hydroxide, added to soap to aid and increase its detergent properties.

(9) "Fillers" means all water insoluble substances and all water soluble materials except alkaline compounds.

(10) "Person" means any individual, partnership, association, business trust, corporation, or any organized group of persons whether incorporated or not.

(11) "Manufacturer" means any person who produces soap and includes a soap converter.

(12) "Soap converter" means any person who uses soap made by others as a raw material, and by the addition of other materials, including, but not limited to, silicates, phosphates, abrasives, borax, corn meal, and soda ash, makes a finished product which is sold for detergent uses.

(13) "Packaged soap" means any bar soap and any other soap packed in a unit package weighing less than 25 pounds net.

(14) "Bulk package" means a unit package containing 25 pounds net or more of any soap except bar soap.

(15) "Inventory" means, with respect to any person, the quantity of soap which has been delivered to him and is on his premises or in other storage facilities used by him, except that it does not include a soap converter's stock of finished products.

(16) "Director" means the Director of Food Distribution, War Food Administration.

(b) *Classification of soap.* For the purposes of this order all soap products shall be classified as follows:

(1) Class 1 shall include all bar soaps (except bar laundry soaps in class 6 hereof) with a base anhydrous soap content of 60 per cent or more.

(2) Class 2 shall include all packaged soap in the form of chips, flakes, powder, granules, or similar packaged forms with a base anhydrous soap content of 85 per cent or more.

(3) Class 3 shall include all packaged soaps in the form of chips, flakes, powder, granules, or similar packaged forms, with a base anhydrous soap content of 10 per cent or more, but less than 85 per cent.

(4) Class 4 shall include all packaged soaps in the form of chips, flakes, powder, granules, or similar packaged forms with a base anhydrous soap content of 50 per cent, or more, but less than 70 per cent.

(5) Class 5 shall include all white laundry bar soap of less than 60 per cent base anhydrous soap content.

(6) Class 6 shall include all rosin yellow laundry bar soap.

(7) Class 7 shall include all other forms of soap not included in said classes 1 to 6, inclusive, including, but not limited to, solid soap sold in bulk packages, package or bulk washing powder, paste potash soaps, liquid soaps, paste and powdered hand soaps, shaving creams and shaving soaps, shampoo soaps, and soap chips, flakes, powder, or granulated products not included in said classes 1 to 6, inclusive.

(c) *Restrictions on the manufacture of soap.* On and after November 1, 1943, the production of a manufacturer shall be limited to his soap products as defined in paragraph (a) (3) hereof: *Provided, however,* That the contents of such products shall be made to conform with the provisions of paragraph (d) herof.

(d) *Restrictions on the contents of soap products.* On and after November 1, 1943, no manufacturer shall produce any soap product unless the contents thereof shall comply with the following requirements:

(1) The anhydrous soap content derived from fats and oils only of any soap product within Class 1 shall be an amount equal to 98 per cent of the base anhydrous soap content of such product and the rosin soap content of such product shall exceed the rosin soap content of the product as manufactured in the base period by an amount equal to 2 per cent of the base anhydrous soap content of such product.

(2) The anhydrous soap content derived from fats and oils only of any soap product within Class 2 shall be an amount equal to 95 per cent of the base anhydrous soap content of such product and the rosin soap content of such product shall exceed the rosin soap content of the product as manufactured in the base period by an amount equal to 5 per cent of the base anhydrous soap content of such product.

(3) The anhydrous soap content derived from fats and oils only of any soap product within Class 3 shall be an amount equal to 85 per cent of the base anhydrous soap content of such product and the rosin soap content shall exceed the rosin soap content of the product as manufactured in the base period by an amount equal to 5 per cent of the base anhydrous soap content of such product, and, in addition thereto, the amount of rosin soap, builders, or rosin soap and builders shall exceed the quantity of such materials contained in said product as manufactured in the base period by a further amount equal to 10 per cent of the base anhydrous soap content of such product.

(4) The anhydrous soap content derived from fats and oils only of any soap product within Class 4 shall be an amount equal to 90 per cent of the base anhydrous soap content of such product and the rosin soap content of such product shall exced the rosin soap content of the product as manufactured in the base period by an amount equal to 5 per cent of the base anhydrous soap content of such product, and in addition thereto, the quantity of rosin soap, builders, or rosin soap and builders in the product shall exceed the quantity

of rosin soap, builders, or rosin soap and builders contained in the product as manufactured in the base period by a further amount equal to 5 per cent of the base anhydrous soap content of such product.

(5) The total anhydrous soap content of a soap product within Class 5 shall not be greater than 42 per cent and the rosin soap shall comprise not less, and not more, than 4 per cent of such content.

(6) The total anhydrous soap content of any soap product within Class 6 shall not be greater than 58 per cent, and rosin soap shall comprise not less than 37½ per cent of such content.

(7) No change shall be required with respect to the contents of any soap product within Class 7.

The moisture content of a soap product in its finished state shall not exceed the moisture content of such product in its finished state as produced in the base period. The contents of a soap product shall be computed as of the time of manufacture.

(e) *Restrictions on inventories.* Except as provided for in paragraph (f) hereof, on or after November 1, 1943, no person shall accept delivery of soap in a bulk package or packaged soap in a case, for use in any manner in his business operations from a manufacturer, jobber, or wholesaler, if such acceptance of delivery will cause his inventory of soap to exceed a 45-day supply at his current rate of consumption; or two bulk packages or cases of packaged soap; which ever is greater, and unless he shall properly fill out and furnish to the person delivering the soap to him, with the order for such soap, a certificate in the following form:

The undersigned hereby certifies to the Food Distribution Administration, War Food Administration, and to.....
(Name and address of supplier)
in compliance with FDO No. 86, that the delivery of the soap covered by the attached order No. ..... on the approximate date specified for delivery, to wit: .....,
(Date
will not cause his inventory of soap to exceed: (a) a 45-day supply at his current rate of consumption, or (b) two bulk packages or cases of packaged soap [strike out (a) or (b) whichever is inapplicable].

.....
(Deliveree)

..... By:.....
(Date) (Authorized official)

Such certificates shall be retained by the manufacturer, jobber, or wholesaler receiving them as a part of his records for a period of at least two years, or for such other periods of time as the Director may hereafter specify. No manufacturer, wholesaler, or jobber shall deliver any soap to any person without receiving such certificate when he knows or has reason to believe that such person is required by the terms of this order to furnish him with such a certificate, and no manufacturer, jobber, or wholesaler shall deliver any soap pursuant to a certificate which he knows or has reason to believe is false, but, in the absence of such knowledge or reason for belief, he may rely on the certificate.

(f) *Exceptions.* The provisions and restrictions of paragraph (e) hereof shall not apply to the delivery to, or the acceptance of delivery by:

(1) Any person who accepts delivery of soap for the purpose of resale and who resells the soap in the form in which he received it, or who, prior to reselling, merely adds small amounts of color or perfume to the soap, or dissolves it in water to make liquid soap without adding other non-soap detergent materials; or

(2) The Army, Navy, Marine Corps, the Coast Guard of the United States; the Food Distribution Administration, War Food Adminisration (including, but not restricted to, the Federal Surplus Commodities Corporation); the War Shipping Administration; the Veterans Administration; or any other instrumentality or agency designated by the War Food Administrator.

(g) *Contracts.* The restrictions of this order shall be observed without regard to contracts heretofore or hereafter entered into, or any rights accrued or payments made thereunder.

(h) *Records and reports.* (1) Every manufacturer shall keep records by calendar or fiscal months showing the amount of fats and oils and the amount of rosin used by him in the manufacture of each class of soap product, and the weight of the finished soap produced by him in each class.

(2) The Director shall be entitled to obtain such information from, and require such reports and keeping of such records by, any person, as may be necessary or appropriate, in his discretion, to the enforcement or administration of the provisions of this order.

(3) Every person subject to this order shall, for at least two years (or for such period of time as the Director may designate), maintain an accurate record of his transactions in soap.

(4) The record-keeping and reporting requirements of this order have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942. Subsequent record-keeping or reporting requirements will be subject to the approval of the Bureau of the Budget pursuant to the Federal Reports Act of 1942.

(i) *Audits and inspections.* The Director shall be entitled to make such audit or inspection of the books, records and other writings, premises or stocks of soap or any person, and to make such investigations, as may be necessary or appropriate, in his discretion, to the enforcement or administration of the provisions of this order.

(j) *Petition for relief from hardship.* Any person affected by this order who considers that compliance herewith would work an exceptional and unreasonable hardship on him, may file a petition for relief in writing with the Director, addressed as follows: Director of Food Distribution, War Food Administration, Washington 25, D. C., Ref. FDO 86. Such petition shall set forth all pertinent facts and the nature of the relief sought. The Administrator of this order shall then act upon the petition. In the event that the petitioner is dissatisfied with the action taken by the Administrator of this order, he may request a review of such action by the Director whose decision with respect to the relief sought shall be final.

(k) *Violations.* The War Food Administrator may, by suspension order, prohibit any person who violates any provision of this order from receiving, making any deliveries of, or using soap, or any other material subject to priority or allocation control by the War Food Administrator, and may recommend that any such person be prohibited from receiving, making any deliveries of, or using materials subject to the priority or allocation control of other governmental agencies. In addition, any person who wilfully violates any provision of this order is guilty of a crime and may be prosecuted under any and all applicable laws. Further, civil action may be instituted to enforce any liability or duty created by, or to enjoin any violation of, any provision of this order.

(l) *Communications.* All reports required to be filed hereunder and all communications concerning this order shall, unless instructions to the contrary are issued by the Director, or otherwise provided herein, be addressed to the Director, of Food Distribution, War Food Administration, United States Department of Agriculture, Washington 25, D. C. Ref. FDO 86.

(m) *Delegation of authority.* The administration of this order and the powers vested in the War Food Administrator, insofar as such powers relate to the administration of this order, are hereby delegated to the Director. The Director is authorized to redelegate to any employee of the United States Department of Agriculture any or all of the authority vested in him by this order.

(n) *Territorial extent.* This order shall apply only to the 48 States of the United States and the District of Columbia.

(o) *Effective date.* This order shall become effective on November 1, 1943, at 12:01 a. m., e. w. t.

(E.O. 9280, 7 F.R. 10179; E.O. 9322, 8 F.R. 3807; E.O. 9334, 8 F.R. 5423)

Issued this 18th day of October 1943.

ASHLEY SELLERS,
Assistant War Food Administrator.

FATTY ACID INVENTORIES
FDO-87

[FDO 87, Amdt. 1]

PART 1460—FATS AND OILS

RESTRICTIONS ON INVENTORIES OF FATTY ACIDS

Food Distribution Order 87 (8 F.R. 14419) § 1460.31, issued by the War Food Administrator on October 23, 1943, is amended to read as follows:

(a) *Definitions.* (1) The term "fatty acids" means all grades and qualities of fatty acids, whether distilled or undistilled, produced from animal, vegetable, fish, or marine animal fats and oils, excluding crude and refined tall oil; raw or acidulated foots produced in the refining of animal, vegetable, fish, or marine animal fats and oils;

pitch, and fatty acids which have been processed to the extent that they no longer exist as such by reason of chemical changes or compounding with non-fatty materials.

(2) The term "person" means any individual, partnership, association, business trust, corporation, or any organized group of persons whether incorporated or not.

(3) The term "user" means any person who engages in the manufacturing of any product by any process which requires the use of fatty acids, without regard to whether or not fatty acids are incorporated in the product.

(4) The term "inventory" means the total quantity of fatty acids owned by any user at any particular time, excluding fatty acids which were produced by such user, or delivered to him pursuant to a specific authorization by the Director.

(5) The term "base period" means the period beginning on July 1, 1943 and ending on December 31, 1943.

(6) The term "base period use" means the total quantity of fatty acids used by any person, as a user, in the base period, excluding fatty acids which were produced by such user, or used by him pursuant to a specific authorization by the Director, except that any fatty acids of a particular kind used by a user in the base period pursuant to a specific authorization by the Director may be included whenever fatty acids of the same kind may, by order of the War Food Administrator, be used without specific authorization by the Director.

(7) The term "maximum unit" means, with respect to any user, the largest, single, segregate, commercial quantity of fatty acids which such user accepted delivery of, from other persons, during the base period. For example, such a unit might be one, but not more than one, of the following: a tank car, or fraction thereof; a carload, or fraction thereof, of packages; or a truckload, or fraction thereof, of packages.

(8) The term "Director" means the Director of Food Distribution, War Food Administration.

(b) *Inventory limitations.* Except as provided for in (c) hereof, no user shall accept delivery of any fatty acids from any other person, if such acceptance of delivery will cause his inventory to exceed a quantity equal to one-third of his base period use.

(c) *Exceptions.* Notwithstanding the provisions of (b) hereof:

(1) Any user may accept delivery of his maximum unit of fatty acids, if at the time of such acceptance of delivery his inventory does not exceed a quantity equal to one-sixth of his base period use, and

(2) Any user may accept delivery of fatty acids, if such acceptance of delivery will not cause his inventory to exceed 3,000 pounds.

(d) *Restrictions on delivery.* No user shall accept delivery of more than 50 pounds of fatty acids in any calendar month unless and until he shall have properly filled out, executed, and delivered to the person making delivery of such fatty acids a certificate in the following form:

The undersigned hereby certifies to the War Food Administration and to .....
(Name of .....
..... that he is familiar with supplier)
the provisions of Food Distribution Order No. 87, and all amendments, if any, thereto, and that the acceptance of delivery by him of ..... pounds of fatty acids, from said supplier, in connection with which this certificate is furnished, will not be in violation of the provisions of said Food Distribution Order No. 87, or any amendment thereto.

.....
(Name of deliveree)

By .....
(Authorized official)

.....
(Date)

No person shall deliver more than 50 pounds of fatty acids in any calendar month to any user without receiving such a certificate.

(e) *Records and reports.* (1) Every person subject to this order shall, for at least two years (or for such period of time as the Director may designate), maintain an accurate record of his transactions in fatty acids, and retain all certificates received by him pursuant to (d) hereof.

(2) The Director shall be entitled to obtain such information from, and require such reports and keeping of such records by, any person, as may be necessary or appropriate, in his discretion, to the enforcement or administration of the provisions of this order.

(3) The record-keeping and reporting requirements of this order have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942. Subsequent record-keeping or reporting requirements will be subject to the approval of the Bureau of the Budget pursuant to the Federal Reports Act of 1942.

(f) *Audits and inspections.* The Director shall be entitled to make such audit or inspection of the books, records and other writings, premises or stocks of fatty acids of any person, and to make such investigations, as may be necessary or appropriate, in this discretion, to the enforcement or administration of the provisions of this order.

(g) *Petition for relief from hardship.* Any person affected by this order who considers that compliance herewith would work an exceptional and unreasonable hardship on him, because he did not use fatty acids in the base period, or used in such period a substantially lower amount of fatty acids than his current requirements, or for any other reason, may file a petition for relief in writing with the Director, addressed as follows: Director of Food Distribution, War Food Administration, Washington 25, D. C., Ref. FDO 87. Such petition shall set forth all pertinent facts and the nature of the relief sought. The Administrator of this order shall then act upon the petition. In the event that the petitioner is dissatisfied with the action taken by the Administrator of this order, he may request a review of such action by the Director whose decision with respect to the relief sought shall be final.

(h) *Violations.* The War Food Administrator may, by suspension order, prohibit any person who violates any provision of this order from receiving, making any deliveries of, or using fatty acids, or any other material subject to priority or allocation control by the War Food Administrator, and may recommend that any such person be prohibited from receiving, making any deliveries of, or using materials subject to the priority or allocation control of other governmental agencies. In addition, any person who wilfully violates any provision of this order is guilty of a crime and may be prosecuted under any and all applicable laws. Further, civil action may be instituted to enforce any liability or duty created by, or to enjoin any violation of, any provision of this order.

(i) *Delegation of authority.* The administration of this order and the powers vested in the War Food Administrator, insofar as such powers relate to the administration of this order, are hereby delegated to the Director, and may be redelegated by him to any employee of the United States Department of Agriculture.

(j) *Communications.* All reports required to be filed hereunder and all communications concerning this order shall, unless instructions to the contrary are issued by the Director, or otherwise provided herein, be addressed to the Director of Food Distribution, War Food Administration, Washington 25, D. C., Ref. FDO 87.

(k) *Territorial extent.* This order shall apply only in the forty-eight States of the United States, and the District of Columbia.

(l) *Effective date.* This order shall become effective at 12:01 a. m., e. w. t., January 1, 1944. However, with respect to violations of said Food Distribution Order 87, or rights accrued, or liabilities incurred thereunder, prior to said date, said Food Distribution Order 87 shall be deemed in full force and effect for the purpose of sustaining any proper suit, action, or other proceeding with respect to any such violation, right, or liability.

(E.O. 9280, 7 F.R. 10179; E.O. 9322, 8 F.R. 3807; E.O. 9334, 8 F.R. 5423; E.O. 9392, 8 F.R. 14783.)

Issued this 30th day of December 1943.

ASHLEY SELLERS,
Assistant War Food Administrator.

SOAP SIZE AND QUALITY
CPR-1

(Document No. 2179)

TITLE 32—NATIONAL DEFENSE

Chapter XI—Office of Price Administration

PART 1386—SOAPS AND GLYCERINE

[Commodity Practice Regulation 1]

BAR OR PACKAGE SOAPS OR CLEANERS

In the judgment of the Price Administrator it is necessary in order to effectuate the purposes of the Emergency Price Control Act of 1942 and to prevent manipulative practices which are equivalent to or are likely to result in price increases and evasions of the General Maximum Price Regulation[1] in the sale of bar or package soaps or cleaners to prescribe and limit further changes in weight and quality of such products.

A statement of the considerations involved in the issuance of this Regulation has been issued simultaneously herewith and filed with the Division of the Federal Register.

Therefore, under the authority vested in the Price Administrator by the Emergency Price Control Act of 1942, and in accordance with Procedural Regulation No. 1[2] issued by the Office of Price Administration, Commodity Practices Regulation No. 1 is hereby issued.

Sec.

1386.1 Prohibition against changes in weight or quality of bar or package soaps or cleaners sold or delivered by manufacturers thereof.
1386.2 Definitions.
1386.3 Records and reports.
1386.4 Enforcement.
1386.5 Exceptions.
1386.6 Petitions for amendment.
1386.7 Applicability.
1386.8 Effective date.
1386.9 Report form.

AUTHORITY: §§ 1386.1 to 1386.8, inclusive, issued pursuant to Pub. Law 421, 77th Cong., 2nd Sess.

§ 1386.1 *Prohibition against changes in weight or quality of bar or package soaps or cleansers sold or delivered by manufacturers thereof.* (a) On and after July 21, 1942, regardless of the terms of any contract, lease or other obligation, no manufacturer thereof may sell, offer to sell, or deliver to any person bar or package soaps or cleansers which differ in weight or quality from a bar or package soap or cleanser delivered or offered for current delivery by such manufacturer in the market area where such person is located during the thirty day period ending July 17, 1942, except as provided in paragraphs (b) (c) (d) and (e) of this section.

(b) Notwithstanding the provisions of paragraph (a) of this section, a manufacturer may improve the quality of any bar or package soap or cleanser delivered or offered for current delivery by him during the thirty day period ending July 17, 1942, but in determining the maximum price for the improved bar or package soap or cleanser under the General Maximum Price Regulation it shall be deemed to be the same commodity as the non-improved bar or package soap or cleanser.

(c) Notwithstanding the provision of paragraph (a) of this section any manufacturer may sell, offer to sell, or deliver in any market area of the United States any bar or package cleanser or washing powder having an anhydrous soap content of 20 per cent or less, which had been delivered or offered for current delivery during the thirty day period ending July 17, 1942, in any market area in the United States.

(d) (1) Notwithstanding the provisions of paragraph (a) of this section, a manufacturer may make changes in the composition of a bar or package soap delivered or offered for current delivery by such manufacturer in any market area of the United States during the thirty day period ending July 17, 1942 if such changes are required by Food Distribution Order No. 86, as issued by the War Food Administration on October 18, 1943; *Provided,* That:

(i) Where the result of any such change is to reduce the weight of the total anhydrous soap content in a bar by more than one per cent, the cut weight of such bar shall be increased to such an extent that the weight of its total anhydrous soap content is equal to at least 99 per cent of the weight of its total anhydrous soap content prior to the change.

(ii) Where the result of any such change is to reduce the weight of the total anhydrous soap content of a package by more than three per cent, the packed weight of such package shall be increased to such an extent that the weight of its total anhydrous soap content is equal to at least 97 per cent of the weight of its total anhydrous soap content prior to the change.

The maximum prices of a bar or package soap whose cut or packed weight is increased as provided above, as established under any applicable regulation issued by the Office of Price Administration, shall remain unchanged.

(2) Each manufacturer who changes the composition of a bar or package soap under the provisions of this paragraph (d) shall, prior to making delivery of any such changed bar or package soap, submit by registered mail to the Chemicals and Drugs Price Branch, Office of Price Administration in Washington, D. C., a report on the form set out in § 1386.9, or on a form copied therefrom, containing the applicable information required by that form.

A new report shall similarly be submitted whenever there is a subsequent change in the total anhydrous soap content or in the cut or packed weight of such bar or package soap.

(e) (1) A manufacturer need not increase the packed weight of a package soap to the extent required by paragraph (d) above if he can not do so without substantial hardship, and he fills such package to a packed weight at least as great as the packed weight prior to any changes under paragraph (d). Where the packed weight is less than the packed weight required by paragraph (d), however, his maximum prices and the maximum prices of all other sellers of such package soap, as established under any applicable regulation issued by the Office of Price Administration, shall be reduced in the same proportion as the packed weight is reduced from that required by paragraph (d). The resulting prices shall be computed to the nearest cent, except in the case of manufacturers, who shall compute their prices to the nearest tenth cent. Each seller who is required by any regulation issued by the Office of Price Administration to post the maximum price of such package soap shall change such posting to show the reduced maximum price.

The manufacturer of any package soap whose packed weight is adjusted under this subparagraph (1) shall firmly affix to each case of such package soap for a period of ninety days from the first delivery thereof at changed maximum price, in such manner as to be clearly visible to the purchaser, a notice containing the following:

(i) Statement that the case contains a size of the particular package soap different from the size (specify) generally delivered by the manufacturer prior to November 1, 1943.

(ii) A statement that each seller's maximum price for the new size, as established by the Office of Price Administration is ..... (specify) per cent less than the maximum price established for the size (specify) generally delivered by the manufacturer prior to November 1, 1943, and shall be figured to the nearest cent.

(iii) A statement that each seller who is required by any regulation issued by the Office of Price Administration to post the maximum price of such package soap shall change the posting to show the reduced maximum price.

(2) A manufacturer who has adjusted the packed weight of a package soap under paragraph (e) (1) above, shall, prior to making any delivery of the package soap at the adjusted weight, submit by registered mail to the Chemicals and Drugs Price Branch of the Office of Price

[1] 7 F. R. 3153, 3330, 3666, 3990, 3991, 4339, 4487, 4659, 4738, 5027.
[2] 7 F. R. 971, 3663.

Administration in Washington, D. C., a report on the form set out in § 1386.9, or on a form copied therefrom, containing the applicable information specified therein.

A new report shall similarly be submitted whenever there is a subsequent change in the total anhydrous soap content or packed weight of the package soap.

(3) After a manufacturer has adjusted the packed weight of a package soap so that maximum prices are required to be reduced under paragraph (e) (1) above, no further changes may be made in the total anhydrous soap content of such package soap except to increase such total anhydrous soap content to an amount equal to at least 97 per cent by weight of the total anhydrous soap content prior to any changes therein under the provisions of paragraph (d). Where such an increase in total anhydrous soap content is made, the maximum prices of all sellers shall become the same as they were prior to the reduction made under the provisions of paragraph (e) (1).

Where the total anhydrous soap content of a package soap is increased as specified above, the manufacturer shall firmly affix to each case of such package soap for a period of ninety days from the first delivery at an increased maximum price, in such manner as to be clearly visible to a purchaser, a notice stating that resellers may increase their maximum prices for such package soap to their maximum prices for such package soap in effect on November 1, 1943.

§ 1386.2 *Definitions.* (a) This Commodity Practices Regulation No. 1 and the terms appearing therein shall be construed as follows:

(1) "Person" includes an individual, corporation, partnership, association, any other organized group of persons, legal successor or representative of any of the foregoing, and includes the United States, any agency thereof, any other government, or any of its political subdivisions, and any agency of any of the foregoing.

(2) "Manufacturer" means a person who packages soaps or cleansers or cuts or forms or stamps the same into bars.

(3) "Soap" means the product formed by the saponification or neutralization of fats, oils, waxes, rosins, or their acids (fatty acids) with organic or inorganic bases, or any detergent composition containing such product.

(4) "Bar soap or cleanser" means the following kinds of soap or cleanser in the size or type of bar which is customarily sold to household consumers:

(i) Toilet soap.

(ii) Laundry soap.

(iii) Bar cleansers.

(5) "Package soap or cleanser" means the following kinds of soap or cleanser in the size or type of package which is customarily sold to household consumers:

(i) Granulated, powdered or sprayed soap.

(ii) Soap chips and flakes.

(iii) Washing powder.

(iv) Cleansers and scouring powders.

(6) "Differ in weight" refers to a difference in marked weight in the case of package soaps or cleansers which have a marked weight or in packed weight in the case of package soaps or cleansers which have no marked weight or in cut weight in the case of bar soaps or cleansers.

(7) "Marked weight" is the net weight of the contents thereof as marked on a package of soap or cleanser which is not in bar form.

(8) "Packed weight" means the net weight of the contents of a package of soap or cleanser not in bar form immediately after packaging.

(9) "Cut weight" means the weight of a bar of soap or cleanser immediately after being cut, formed or stamped, into bars.

(10) "Differ in quality" refers to:

(i) A difference in serviceability per unit weight in the use for which the soap or cleanser is customarily intended, or

(ii) A difference in anhydrous soap content.

(11) "Improve the quality" refers to:

(i) An increase in the anhydrous soap content of a bar or package soap or cleanser, or

(ii) An increase in the serviceability per unit weight in the use for which the soap or cleanser is customarily intended.

(12) "Anhydrous soap content" means the anhydrous soap content as determined by the official methods for testing soap set out in Federal Specification P-S-536 for Soap and Soap Products; General Specifications for Sampling and Testing.

(13) "Market area" means the geographical area in which a manufacturer has delivered or offered for current delivery a particular bar or package soap or cleanser during the thirty day period ending July 17, 1942.

(b) Unless the context otherwise requires, the definitions set forth in section 302 of the Emergency Price Control Act of 1942 shall apply to other terms used in this Commodity Practices Regulation No. 1.

§ 1386.3 *Records and reports.* (a) Every manufacturer shall by September 17, 1942 prepare and file with the Office of Price Administration in Washington, D. C., a detailed description of each weight and quality of bar or package soap or cleanser delivered or offered for current delivery by him during the thirty day period ending July 17, 1942 and of the geographical area in which he delivered or offered for current delivery such bar or package soap or cleanser during said period.

(b) Every such manufacturer shall submit such reports to the Office of Price Administration and keep such other records in addition to or in place of the records required in paragraph (a) of this section as the Office of Price Administration may from time to time require.

§ 1386.4 *Enforcement.* (a) Persons violating any provision of this Commodity Practices Regulation No. 1 are subject to the criminal penalties and civil enforcement actions provided for by the Emergency Price Control Act of 1942.

(b) Persons who have evidence of any violation of this Commodity Practices Regulation No. 1 or any price schedule,

(*Turn to Page* 192)

OPA Form No. 692-541. Form Approved
Budget Bureau No. 08-R703

UNITED STATES OF AMERICA

OFFICE OF PRICE ADMINISTRATION

REPORT OF CHANGE IN SOAP COMPOSITION

Under Provisions of [1386.1 (d) or (e) of Commodity Practices Regulation No. 1

Name of company..... Address..... Street City State

Submitted by..... ..... Title

Brand name	Per cent price reduction (1)	Carload price per case before cash discount (2) Before	(2) After	Cut wt. or packed wt. per unit in oz. (3) Before	(3) After	Anhydrous Total (4) Before	(4) After	Soap content From fats and oils (5) Before	(5) After	In oz. per unit From rosin (6) Before	(6) After	Builder oz. per unit (7)
Example (price change)	2.062	$4.60	$4.477	70	70	43.400	41.230	43.400	39.060	None	2.170	21 23.170
Example (no price change)	——	——	——	70	71.474	43.400	42.098	43.400	39.882	None	2.216	21 23.657

INSTRUCTIONS TO FORM

Column (1). If you have reduced your price for the changed bar or package, state your suggested percentage price reduction to your resellers in this column.

Column (2). If you have changed the price of the bar or package to conform with the change in composition, enter in "before" sub-column your maximum price which was in effect immediately prior to the change in composition. Enter in "after" sub-column the price you propose to charge for the changed bar or package.

Columns (3) to (7) inclusive. In "before" sub-column of each column state the composition of the bar or package produced during the 30-day period ending July 17, 1942. If you sold, but did not produce, the bar or package in that period, then state the composition as produced by you in the most recent period to the 30 days ending July 17, 1942. In "after" sub-column show the composition of the bar or package as changed by you under the provisions of § 1386.1 (d) or (e) of Commodity Practices Regulation No. 1.

NOTE: All weights are to be expressed as ounces per consumer unit, to three decimal places.

16 CLASSIFICATIONS of SCIENTIFICALLY PRODUCED SOAPS . . .

CHEMICALLY BALANCED for PERFORMANCE and ECONOMY—

Satisfy ALL YOUR SOAP DEMANDS!

Check over this list. You'll find a product for every soap requirement you have—you'll find a full line of related soaps from one source—you'll find the highest quality chemically controlled and balanced soaps.

- Auto Soaps
- Chip Soaps (and flakes)
- Cleansers
- Hand Soap (powdered)
- Hotel Soaps
- Laundry Soaps
- Laundry Soaps (chips)
- Laundry soaps (powdered and granulated)
- Liquid Soaps
- Oil Soaps
- Scouring Powder
- Scrubbing Soap (liquid)
- Soap Powders
- Textile Soaps
- Toilet Soaps
- Washing Powder

If You —

require a soap that is not listed, or need the help of a soap engineer, please let us know. Our Chemical Research Department is always available, at no obligation to you, for consultation on your problems.

One of Armour's 321 Branch Houses is conveniently located near you. Make it a point to call the Armour representative today to discuss your soap needs.

ARMOUR and COMPANY

INDUSTRIAL SOAP DEPARTMENT

1355 WEST 31st STREET, CHICAGO, ILLINOIS

Specifications*

Chip Soap (P-S-566a)

Chip soap shall be a soap in chip form made from soda and fats or fatty acids, without rosin, as free as possible from water and all substances other than true soap, of a light uniform color, free from disagreeable odor, and suitable for laundering and other washing, cleaning and scouring processes with soft water, when the presence of alkaline salts is not desirable.

Moisture and matter volatile at 105° C. shall not exceed 10 per cent. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 4 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.2 per cent. Matter insoluble in water shall not exceed 1.0 per cent. Anhydrous soap shall be not less than 85 per cent. Titer of the mixed fatty acids prepared from the soap must be not less than 39° C. No rosin shall be present. Total glycerol content (per cent of anhydrous soap) maximum 0.8.

Cake Grit Soap (P-S-571a)

Cake grit soap shall be of the following types as specified: Type A—for fine work, such as glass and enamel; Type B—for scouring and scrubbing.

Type A—

Moisture and matter volatile at 105° ±2° C. shall not exceed 4 per cent. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate (Na_2CO_3), shall not exceed 1 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 88 per cent nor more than 93 per cent. The insoluble siliceous material shall consist of not less than 90 per cent of ground feldspar. All of the insoluble siliceous material shall pass through a No. 100 sieve, and the residue retained on a No. 200 sieve shall not exceed 5 per cent. Sugar, and foreign matter shall not be present. Anhydrous soda soap shall be within 1 per cent of the difference between 100 and the sum of the matter volatile at 105° ±2° C., insoluble siliceous material, and alkali as alkaline salts. The cakes shall be well compressed and of a satisfactory degree of friability, which shall not be materially affected or lessened after immersion in or contact with water. The material shall not scratch glass or enameled surfaces. The material shall be unscented and shall be of a light gray or white color. Total glycerol content shall not exceed 0.8 per cent of the weight of anhydrous soap contained in this product.

Type B—

Moisture and matter volatile at 105° ±2° C. shall not exceed 5 per cent. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate (Na_2CO_3), shall not exceed 3 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall not be less than 75 nor more than 85 per cent. The insoluble siliceous material shall be mainly quartz, and it all must pass through a No. 100 sieve. Sugar, and foreign matter shall not be present. Anhydrous soda soap shall be within 1 per cent of the difference between 100 and the sum of the matter volatile at 105° ±2° C., insoluble siliceous material, and alkali as alkaline salts. The cakes shall be well compressed and of a satisfactory degree of friability, which shall not be materially affected or lessened after immersion in or contact with water. The material shall be unscented and shall be of a light gray or white color. Total glycerol content shall not exceed 0.8 per cent of the weight of anhydrous soap contained in this product.

Hand Grit Soap (P-S-576)

Hand-grit soap shall be a cake soap containing about one-third its weight of clean, finely divided insoluble siliceous matter, as free as

***GOVERNMENT** specifications on many soaps and detergents have been revised within recent months, and in many cases further changes are in prospect to fit government standards to war conditions. It is believed that the specifications listed are the latest versions as of the date of compilation of this material, but it should be emphasized that further changes may subsequently be ordered. Only the essential requirements have been extracted in our summary. Copies of the complete specifications, including details as to packing, methods of analysis, etc., are available through the U. S. Federal Specifications Board.*

* General and detailed requirements as specified in the Standard Stock Catalogue of the U. S. Federal Specifications Board.

possible from water, uncolored, unscented unless otherwise specified, thoroughly saponified, and well compressed in firm, smooth cakes.

Matter volatile at 105° C. shall not exceed 32 per cent. Deliveries which yield more than 32 per cent of volatile matter will be rejected without further test. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate (Na_2CO_3), shall not exceed 1 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 25 nor more than 40 per cent. The insoluble siliceous material shall not yield more than 2 per cent of residue retained on a No. 100 sieve and not more than 10 per cent of residue retained on a No. 200 sieve. Sugar, and foreign matter shall not be present. Rosin shall not exceed 5 per cent. Total glycerol content shall not exceed 0.8 per cent of the weight of anhydrous soap contained in this product. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents, except glycerol which will be calculated on the anhydrous soap basis, will be calculated to the basis of material containing 30 per cent of matter volatile at 105° C.

Laundry Chip Soap (Rosin Type) (P-S-581)

Laundry chip soap shall be a well-made, uniformly mixed soap in chip form, made from soda and fats or fatty acids, with no excessive proportion of rosin and a moderate amount of matter insoluble in alcohol, shall be of a uniform color, and shall be suitable for use with moderately hard water for general cleaning and laundry purposes. The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on dishes or other objects after washing with a water solution of the soap and rinsing thoroughly with hot water. If desired, the odor of the material under the above conditions shall conform to the odor of a sample mutually agreed upon by buyer and seller.

The material shall conform to the detail requirements listed in the table above.

Detail Requirements for Laundry Chip Soap

	Maximum Per Cent	*Minimum Per Cent*
Moisture and matter volatile at 105° C.	15.0	....
Sum of free alkali or free acid, total matter insoluble in alcohol, and sodium chloride	12.0	....
Free alkali, calculated as sodium hydroxide (NaOH)	.5	....
Free acid, calculated as oleic acid	.5	....
Matter insoluble in water	1.0	....
Chloride, calculated as sodium chloride (NaCl)	1.0	....
Rosin	20.0	....
Anhydrous soap	....	72.0
Total glycerol content (per cent of anhydrous soap)	0.8	....

Granulated Laundry Soap (Rosin Type) (P-S-583)

Laundry granulated soap shall be a well-made, uniformly mixed soap in granulated or powdered form, made from soda and fats or fatty acids, with no excessive proportion of rosin and a moderate amount of matter insoluble in alcohol, shall be of a uniform color, and shall be suitable for use with moderately hard water for general cleaning and laundry purposes. The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on dishes or other objects after washing with a water solution of the soap and rinsing thoroughly with hot water. If desired, the odor of the material under the above conditions shall conform to the odor of a sample mutually agreed upon by buyer and seller. Detail requirements listed in table below.

Liquid Laundry Soap (P-S-586)

Liquid soap for laundry use shall be a clear solution of pure potash (or potash and soda) soap with or without glycerol or alcohol and containing not less than 12 per cent by weight of a volatile organic solvent or a mixture of such solvents. It shall yield a clear solution on mixing with soft water, shall quickly form a satisfactory lather, shall have no injurious effect and leave no objectionable odor on fabrics. Materials washed with this soap shall have, after drying, a soft feel and not appear more boardy or stiff than when washed with soft water.

The material shall be a clear solution, shall yield a clear, homogeneous solution on mixing with soft water, shall quickly form a satisfactory lather, and shall leave no objectionable odor on fabric. Total anhydrous soap shall be not less than the equivalent of 24 per cent potash soap. Total matter insoluble in alcohol shall not exceed 0.5 per cent. Free alkali, calculated as potassium hydroxide (KOH), shall not exceed 0.05 per cent. Chloride, calculated as potassium chloride (KCl) shall not exceed 0.3 per cent. Total matter insoluble in water shall

Detail Requirements for Granulated Laundry Soap

	Maximum Per Cent	*Minimum Per Cent*
Moisture and matter volatile at 105° C.	10.0	....
Sum of free alkali or free acid, total matter insoluble in alcohol, and sodium chloride	14.0	....
Free alkali, calculated as sodium hydroxide (NaOH)	.5	....
Free acid, calculated as oleic acid	.5	....
Matter insoluble in water	1.0	....
Chloride, calculated as sodium chloride (NaCl)	1.0	....
Rosin	20.0	....
Anhydrous soap	....	75.0
Residue retained on a No. 12 sieve	2.0	....
Total glycerine content (per cent of anhydrous soap)	0.8	....

not exceed 0.1 per cent. Volatile organic solvent shall be not less than 12 per cent. All constituents shall be calculated on the basis of the original sample. Fabric washed with the liquid soap shall show no more shrinkage or felting than occurs with similar fabric washed with soft water at the same temperature. Colored materials when washed with this soap shall not fade more than when washed the same number of times at the same temperature with soft water alone.

Ordinary Bar Laundry Soap (P-S-591a)

Ordinary laundry bar soap shall be a well-made, uniformly mixed laundry or common soap, made from soda and fats or fatty acids, with no excessive proportion of rosin and a moderate amount of matter insoluble in alcohol, and shall be suitable for use with moderately hard water for general cleaning and laundry purposes.

Odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The materials shall not leave an objectionable odor on dishes or other objects after washing with a water solution of the soap and rinsing thoroughly with hot water. If desired, the odor of the material under the above conditions shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an air-tight, closed container for comparison with samples from deliveries.

Matter volatile at 105° C. shall not exceed 36 per cent. Deliveries which yield more than 36 per cent volatile matter will be rejected without further test. The sum of free alkali or free acid, total matter insoluble in alcohol and sodium chloride, shall be not less than 2 per cent nor more than 11 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.5 per cent. Free acid, calculated as oleic acid, shall not exceed 0.5 per cent. Matter insoluble in water shall not exceed 1 per cent. Chloride calculated as sodium chloride (NaCl), shall not exceed 1.0 per cent. Rosin shall not exceed 25 per cent. Anhydrous soap shall be not less than 52 per cent. Total glycerol content (per cent of anhydrous soap), maximum 0.8. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constitutents except glycerol which shall be calculated and reported on the basis of the anhydrous soap content, will be calculated on the basis of material containing 36 per cent of volatile matter.

Powdered Laundry Soap (P-S-596a)

Powdered soap shall be a soap in powdered form made from soda and fats or fatty acids, without rosin, as free as possible from water and all substances other than true soap, of a light uniform color, free from disagreeable odor, and suitable for laundering and other washing, cleaning and scouring processes with soft water, when the presence of alkaline salts is not desirable.

Moisture and matter volatile at 105° C. shall not exceed 6 per cent. Deliveries which yield more than 6 per cent of matter volatile at 105° C. will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 4 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.2 per cent. Matter insoluble in water shall not exceed 1.0 per cent. Anhydrous soap shall be not less than 89 per cent. Titer of the mixed fatty acids prepared from the soap shall be not less than 39° C. Residue retained on a No. 12 sieve shall not exceed 1.5 per cent. Rosin, none. Total glycerol content (per cent of anhydrous soap), maximum 0.8. The percentage of moisure and volatile matter will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 6 per cent of volatile matter, except glycerol which shall be calculated and reported on the basis of the anhydrous soap content.

Liquid and Paste Soap for Automobile, Floor and General Cleaning (P-S-598)

Soap covered by this specification shall be of one type only, made solely from vegetable base stock and potash. The material shall be a uniform translucent, firm gel or paste of a yellowish-white to brownish-yellow color. The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on surfaces after washing with a water solution of the soap and rinsing throughly with plain water. *Moisture (by distillation method, using toluol instead of xylol)* shall not exceed 60 per cent. Deliveries which yield more than 60 per cent of moisture shall be rejected without further test. The soap shall dissolve readily to give a 0.15- to 0.2-per cent solution, using distilled water at 15.5 to 20° C. (60° to 68° F.). The solution so prepared shall yield a good suds. A solution of the soap in soft water shall act as a cleaner and shall not damage surfaces on which it is used. When specified, each bidder shall

Detail Requirements for Auto Soap (P-S-598)

		Minimum	*Maximum*
Moisture (toluene distillation method)	per cent	....	60
Total matter insoluble in alcohol	per cent	....	1.0
Free alkali, calculated as potassium hydroxide (KOH)	per cent	....	.1
Free acid, calculated as oleic acid	per cent	....	.2
Alkaline salts, calculated as potassium carbonate (K_2CO_3)	per cent	....	.2
Matter insoluble in distilled water	per cent	....	.2
Chloride, calculated as potassium chloride (KCl)	per cent	....	.5
Anhydrous soap, calculated as potash soap	per cent	40	....
Total sodium compounds, calculated as Na_2O	per cent	....	.5
Glycerol (per cent of anhydrous potash soap)	per cent	....	.8
Iodine number (WIJS) of mixed fatty acids derived from the soap		100	....
Rosin	per cent	....	6
Sugar		....	None

Sales come Easier... Sales come Quicker
WHEN YOU CARRY THE FALCON LINE

LIQUID TOILET SOAPS
Falcon 18% Mechanics Grade
Falcon Coconut Oil Shampoo
Falcon 40% Concentrated
Falcon 18% Toilet Grade

FALCON CLEANSERS
Falcon Commercial Green Soap
Falcon Economy Scrub Soaps
Falcon Liquid Terrazzo Soap
Falcon Liquid Linseed Soap
Vegetable Oil Jelly Soap
Falcon Cleaning Crystals

DEODORANTS
Falcon Blockettes
Falcon Crystals
Falcon Blocs

DISINFECTANTS
Falcon Colloidal Disinfectant
Falcon Formaldehyde Sprays
Falcon Pine Disinfectant

PLUMBING CLEANSERS
Falcon Powdered Bowl Cleaner
Falcon Porcelain Cleaner
Falcon Drain Opener

INSECTICIDES
Falcon Bed Bug Killers
Falcon Roach Powder
Falcon Moth Killer
Falcon Fly Killers
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FLOOR DRESSINGS
Falcon Non-Buffing Wax
Falcon Liquid Floor Wax
Falcon Floor Varnish
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For a steady, profitable, repeat business, hitch your sales story to the Falcon line — to the sanitation products that meet every sanitation need. With Falcon, you offer a product that can back up your promise of dependability, proven performance and satisfaction. You offer a product made under laboratory control with prescription care — a *better product at no extra cost.* It will pay you well to investigate Falcon Sanitation Products. For complete information, write us today.

EAGLE SOAP CORPORATION
HUNTINGTON INDIANA

FALCON SANITATION PRODUCTS

submit with his proposal a 1-quart sample of the soap that he proposes to furnish, packed in a screw-top glass jar, to show odor, color, and consistency. The sample so furnished shall be kept for comparison with samples from deliveries. The material shall not become rancid or otherwise deteriorate when kept in a closed container.

The paste soap shall conform to the detail requirements listed in the table on the previous page,—percentages are by weight:

Detail Requirements for Potash Linseed Soap

	Minimum	*Maximum*
Moisture (toluol distillation method) ..... per cent	....	55
Total matter insoluble in alcohol ..... per cent	....	1.0
Free alkali, calculated as potassium hydroxide (KOH) ... per cent	....	.1
Free acid, calculated as oleic acid ..... per cent	....	.2
Alkaline salts, calculated as potassium carbonate (K_2CO_3) . per cent	....	.2
Matter insoluble in distilled water ..... per cent	....	.2
Chloride, calculated as potassium chloride (KCl) ..... per cent	....	.5
Unsaponified and unsaponifiable matter ..... per cent	....	1.0
Anhydrous soap, calculated at potash soap ..... per cent	43	....
Total sodium compounds, calculated as Na_2O ..... per cent	....	.5
Glycerol ..... per cent	....	.8
Iodine number (WIJS) of mixed fatty acids derived from the soap	175	....
Acid number of mixed fatty acids derived from the soap	190	205
Rosin	....	None
Sugar	....	None

Soap; Low-Titer (P-S-600)

Low-titer soap shall be of the following types and classes:

Type I—Bar form

Type II—Other forms

Class A—Granular

Class B—Powdered

Class C—Flake

The soap shall have a uniform color. The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on dishes or other objects after washing with a water solution of the soap and rinsing thoroughly with hot water. If desired, the odor of the material under the above conditions shall conform to the odor of a sample mutually agreed upon by buyer and seller. When specified, each bidder shall submit with his proposal a sample of the material that he proposes to furnish, to show color, odor, and condition.

Low-titer soap shall conform to detail requirements as listed below:

Detail Requirements for Low Titer Soap

	Type I		*Type II*	
	Max.	*Min.*	*Max.*	*Min.*
Matter volatile at 105° C. (per cent)	35.0	..	7.0	..
Sum of free alkali or free acid, total matter insoluble in alcohol, and sodium chloride (per cent)	2.0	..	4.0	..
Free alkali, calculated as sodium hydroxide (NaOH) (per cent)	0.1	..	0.2	..
Free acid, calculated as oleic acid (per cent)	.1	..	.2	..
Matter insoluble in water (per cent)	.5	..	.5	..
Rosin	None	..	None	..
Sugar	None	..	None	..
Unsaponified matter (per cent)	1.0	..	1.0	..
Anhydrous soap (per cent)	..	61.0	..	87.0
Titer of the mixed fatty acids prepared from the soap	28° C	..	28° C	..
Iodine number (Wijs) of the mixed fatty acids prepared from the soap	105.0	70.4	105.0	74.0
Acid number of the mixed fatty acids prepared from the soap	205.0	180.0	205.0	180.0
Residue retained on a No. 12 sieve (class B only) (per cent)	..	..	1.5	..
Total glycerol content (per cent of anhydrous soap)	0.8	..	0.8	..

Potash Linseed Oil Soap, Liquid and Paste, for Floor and General Cleaning (P-S-603)

Potash-linseed oil soap shall be a uniform translucent, firm gel or paste soap made from linseed oil fatty acids and potash. The material shall be yellowish-white to greenish-brown color. The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on surfaces after washing with a water solution of the soap and rinsing thoroughly with plain water. *Moisture (by distillation method, using toluol instead of xylol)* shall not exceed 55 per cent. Deliveries which yield more than 55 per cent of moisture shall be rejected without further test. The soap shall dissolve readily to give a 0.15- to 0.2-per cent solution, using distilled water at 15.5° to 20° C. (60° to 68° F.). The solution so prepared shall yield a good suds. A solution of the soap in soft water shall act as a cleaner and shall not damage floor surfaces. When specified, each bidder shall submit with his proposal a 1-quart sample of the soap that he proposes to furnish, packed in a screw-top glass jar, to show odor, color, and consistency. The sample so furnished shall be kept for comparison with samples from deliveries. The material of each type shall not become rancid or otherwise deteriorate when kept in a closed container. The material shall conform to the detail requirements in the table above. Percentages are by weight.

Soap Powder (P-S-606a)

Soap powder shall be a uniform mixture of soap and sodium carbonate, and/or other alkaline salts in powdered form. It shall be readily soluble in tepid water, shall contain no free caustic alkali or inert fillers, and shall be free from objectionable odor.

Anhydrous soap shall be not less than 15 per cent. Alkaline salts, calculated as sodium carbonate (Na_2CO_3) shall be not less than 30 per cent. The sum of anhydrous soap and alkaline salts, calculated as

sodium carbonate shall be not less than 55 per cent. Total glycerol content shall not exceed 0.8 per cent of the calculated weight of the anhydrous soap present.

Salt Water Soap (P-S-611a)

Salt-water soap shall be a soap well made from pure coconut oil fatty acids, pure palm kernel oil fatty acids, or a mixture thereof, and soda. It shall be entirely soluble in both sea water and fresh water and shall make a suitable lather. The soap shall be white in color and free from objectionable odor. The material shall conform to the detail requirements listed in the table below.

The percentage of moisture and volatile matter shall be computed, and reported by the testing laboratory, on the soap as received. The percentages of all other constituents shall be calculated and reported on an assumed moisture and volatile matter content of 55%, except glycerol which shall be calculated and reported on the basis of the anhydrous soap content.

White Floating Toilet Soap (P-S-616a)

Floating toilet soap shall be a cake soap without objectionable odor, thoroughly saponified, and so prepared as to float on water.

Moisture and matter volatile at 105° C. shall not exceed 34 per cent. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 2.0 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Chloride, calculated as sodium chloride (NaCl), shall not exceed 1 per cent. Matter insoluble in water shall not exceed 0.2 per cent. Anhydrous soap shall be not less than 62 per cent. Sugar and foreign matter shall not be present. Rosin, maximum 10 per cent, glycerol (per cent of anhydrous soap), maximum 0.8 per cent. The percentage of moisture and volatile matter will be computed on the basis of the soap as received, but all other constituents will be calculated on an assumed moisture and volatile matter content of 34 per cent, except glycerol which shall be calculated and reported on the basis of the anhydrous soap content.

Liquid Toilet Soap (P-S-618a)

Liquid toilet soap shall be a clear solution of pure vegetable oil potash (or potash and soda) soap with or without glycerol or alcohol, suitably perfumed, and free from all foreign matter. It shall quickly form a satisfactory lather and have no injurious effect and leave no objectionable odor on the skin.

The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave any objectionable odor on the skin or other surfaces after washing with a water solution of the soap and rinsing thoroughly with plain water. Unless otherwise specified each bidder shall submit with his proposal a one-quart sample, placed in a screw-top glass jar, to show odor, color, and consistency. The sample so furnished shall be kept for comparison with samples from deliveries.

The material shall be a clear solution, free from objectionable odor, other than from coconut oil, and shall form a satisfactory lather. Total anhydrous soap shall be not less than the equivalent of 15 per cent potash soap. Total matter insoluble in alcohol shall not exceed 0.5 per cent. Free alkali calculated as potassium hydroxide (KOH) shall not exceed 0.05 per cent. Chloride calculated as potassium chloride (KCl) shall not exceed 0.3 per cent. More than traces of sulphates and sugar shall not be present. All constituents shall be calculated on the basis of the original sample.

Milled Toilet Soap (P-S-621a)

Milled toilet soap shall be a high grade, milled cake soap as free as possible from water, either colored or uncolored, and mildly perfumed unless otherwise specified, thoroughly saponified, well compressed in firm, smooth cakes of a size and shape specified in the contract. It should lather freely when used with cold, soft water.

Moisture and matter volatile at 105° C. shall not exceed 15 per cent. Deliveries which yield more than 15 per cent of volatile matter will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 1.7 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Matter insoluble in water shall not exceed 0.4 per cent. Unsaponified saponifiable matter shall not exceed 0.3 per cent. Anhydrous soap shall be not less than 83 per cent. Sugar and foreign matter shall not be present. Rosin, maximum 10 per cent. Glycerol (per cent of anhydrous soap), maximum 0.8 per cent. The percentage of moisture and matter volatile will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 15 per cent of volatile matter, except glycerol which shall be calculated and reported on the basis of the anhydrous soap content.

Powdered Toilet Soap (for (Dispensers) (P-S-626a)

Powdered toilet soap for use in dispensers shall be a thoroughly saponified soap in powdered form,

Detail Requirements for Salt Water Soap

		Maximum	*Minimum*
Moisture and matter volatile at 105°C.	per cent	55.0	..
Total matter insoluble in alcohol	per cent	3.0	2.0
Free alkali, calculated as sodium hydroxide (NaOH)	per cent	.5	..
Chloride, calculated as sodium chloride (NaCl)	per cent	3.0	2.5
Anhydrous soap	per cent	..	38.0
Matter insoluble in water	per cent	.5	..
Acid number of the mixed fatty acids prepared from the soap		..	240
Rosin, sugar, and foreign matter		None	..
Total glycerol content (per cent of anhydrous soap)		0.8	..

made from soda and fats; shall be uncolored and mildly perfumed, unless otherwise specified; shall be a uniform, free-flowing, noncaking powder; and shall lather freely when used with cold soft water.

The material shall be a uniform powder and shall be freeflowing and noncaking when used in a dispenser conforming to type III or IV of Federal Specification FF-D-396. It shall lather freely when used with soft water at room temperatures. Shall be mildly perfumed, unless otherwise specified. If desired, shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an airtight, closed container for comparison with samples from deliveries.

Shall be uncolored, unless otherwise specified. Matter volatile at 105°±2° C. shall not exceed 6 per cent. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 2.0 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Matter insoluble in water shall not exceed 0.2 per cent. Anhydrous soda soap shall be not less than 91 per cent. Rosin, sugar, and foreign matter shall not be present. Total glycerol content shall not exceed 0.8 per cent of the calculated weight of the anhydrous soap present. The material shall meet the following fineness requirements:

Retained on—	*Minimum Per Cent*	*Maximum Per Cent*
No. 12 sieve.....	—	1.5
No. 45 sieve.....	50	—
No. 100 sieve.....	90	—

Toilet Soap-Borax Compound (for Dispensers) (P-S-628)

Soap and borax compound for use in dispensers shall be a uniform mixture of a thoroughly saponified soap and borax ($Na_2B_4O_7$. 10 H_2O); shall be uncolored and mildly perfumed, unless otherwise specified; shall be a uniform free-flowing, non-caking powder, when used in a dispenser conforming to Type III or IV of Fed. Spec. FF-D-396. It shall lather freely when used with soft water at room temperature. Shall be mildly perfumed and free from added coloring matter unless otherwise specified. Anhydrous soda soap shall be not less than 23 per cent and not more than 27 per cent. Borax, calculated as $Na_2B_4O_7$. 10 H_2O, shall be not less than 72 per cent and not more than 77 per cent. The pH of a 1 per cent solution by weight of the material in distilled water shall be not less than 9.0 and not more than 10.2 at 25° C., using a glass electrode. Matter insoluble in water shall not exceed 0.2 per cent. Sugar, and foreign matter shall not be present. Rosin shall not exceed 4.5 per cent. Total glycerol content shall not exceed 0.8 per cent of the calculated weight of the anhydrous soap present. The material shall meet the following fineness requirements:

Retained on—	*Minimum Per Cent*	*Maximum Per Cent*
No. 12 sieve.....	—	0
No. 45 sieve.....	5	—
No. 100 sieve.....	45	—

Caustic Soda for Cleaning (P-S-631a)

Caustic soda shall be of but one grade. It shall be furnished in airtight containers (13-ounce cans or drums) in flake, ground, or lump form, as specified in the invitation for bids. It shall conform to the following detail requirements:

Sodium hydroxide (NaOH) shall be not less than 95 per cent.

Carbonate, calculated as sodium carbonate (Na_2CO_3), shall not be more than 2 per cent.

Laundry Soda (Washing Soda) (P-S-641a)

Laundry soda shall be a white uniform powder composed of sodium carbonate and sodium bicarbonate. It shall conform to the following detail requirements:

	Maximum Per Cent	*Minimum Per Cent*
Total alkalinity, calculated as Na_2O	43	39
Sodium bicarbonate ($NaHCO_3$)	50	35
Sodium carbonate (Na_2CO_3)	50	35
Matter insoluble in water	.1	—

Cleaning Compound (P-C-565) Soap—Abrasive Type for painted surfaces

The product is to be without objectionable odor, and not harmful to the hands. The seller must label each container with directions for use. The product must be capable of being applied either with a damp cloth or sponge. It is to be a uniform soft paste, meeting the following requirements.

Matter volatile at 105°C. shall not exceed 65% by weight. It shall contain not more than 0.1% by weight of free alkali calculated as NaOH. It shall contain not more than 0.5% by weight free acid calculated as oleic acid. Alkaline salts calculated as Na_2CO_3 shall not exceed 5% by weight. Insoluble siliceous matter shall not be less than 25% nor more than 50% by weight. All of the insoluble siliceous matter shall pass through a No. 80 sieve; and not more than 15% shall be retained on a No. 200 sieve. Anhydrous soap shall be not less than 3.5% by weight. Total glycerol content shall not exceed 0.8% of the weight of anhydrous soap contained in this product.

A special test is provided for determination of abrasive properties. A thin film of the compound is spread over a clear microscopic slide. Another slide is placed over the film and the two slides pressed together, using a slight pressure, and rubbing one slide over the other with a rotary motion. The slides when wiped clean of the compound shall not be scratched.

Grease-Cleaning Compound Solvent-Emulsion Type (P-C-576)

Grease-cleaning compound shall be furnished in two types, Type I, non-phenolic, and Type II, phenolic, to be used for military purposes only. The compound shall be uniform liquid and shall be suitable for the purpose intended.

Type I, nonphenolic

Flash point shall be not less than 200° F. (open cup). The compound shall have a neutralization number of not more than 8 (mg. of KOH to neutralize 1 gm. of compound). The compound shall have no free alkali. The pour point shall be not more than 35°F. The loss in weight shall be not more than 10 per cent after a 24-hour period. Shall be free from phenols. Physical and performance tests covering stability of emulsion, solubility in kerosene and in water, etc., are also provided.

Type II, phenolic

As above except that the material is to contain not less than 15 per cent and not more than 25 per cent phenols by volume, and must pass a phenol (C_6H_5OH) limitation test.

Mechanics' Hand Detergent (P-D-221)

Detergent for mechanics use shall be of one type only. It shall be a uniform mixture in powder form, as specified, and shall be satisfactory for removing oil, grease, paint, printing inks, and other occupational soil from the hands of automobile mechanics, machinists, and other operatives without harmful effect on the skin.

The material shall be a uniform, free-flowing powder. The odor shall not be objectionable. If desired shall conform to the odor of a sample nutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an airtight, closed container for comparison with samples from deliveries. Volatile matter at 105° to 110° C. shall not exceed 5 per cent. Deliveries which yield more than 5 per cent of volatile matter shall be rejected without further test. Alkaline salts, calculated as sodium carbonate (Na_2CO_3), shall be not less than 2 per cent nor more than 5 per cent. The alkaline salts shall consist of borax, sodium carbonate or a mixture thereof. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Free acid, calculated as oleic acid, shall not exceed 0.2 per cent. Anhydrous soap, calculated as soda soap, shall be not less than 17 per cent. Insoluble siliceous matter shall be not less than 60 per cent and shall conform to the following fineness requirements:

Retained on—	*Maximum Per Cent*
No. 60 sieve	5
No. 100 sieve	30
No. 200 sieve	60

Rosin or sugar shall not be present. Total glycerol content shall not exceed 0.8 per cent of the weight of the anhydrous soap contained in this product. All constituents shall be reported on the basis of the sample as received, except glycerol which shall be determined on the basis of the anhydrous soap content.

Special Detergents (P-D-236)

Detergents for aluminumware shall be of the following types and classes:

Type I. Detergent for use in mechanical dishwashing machines.

Type II. Detergent for manual cleaning.

Class A. Non-abrasive cleaner.

Class B. Abrasive cleaner.

The material used in Type I detergent shall be suitable for use in mechanical dishwashing machines and shall be substantially uniform in appearance throughout. It shall be free from objectionable odor, and shall dissolve readily in tepid water. Cleaner may be supplied in either powder, granule or chip form provided it conforms to the detailed requirements.

The material used in Type II, Class A non-abrasive cleaner shall be suitable for any type of manual washing where abrasiveness is not desired, and shall be substantially uniform in appearance throughout. It shall be free from objectionable odor, and shall dissolve readily in tepid water. Cleaner may be supplied in either powder, granule or chip form provided it conforms to the detailed requirements.

The material used in Class B abrasive cleaner shall be suitable for any uses requiring a manual cleaner where soil adheres too tenaciously for non-abrasive cleaners. It may be supplied in the form of a solid, a paste, or a combination of any two of the above. Combinations of metal wools and soaps may be supplied. The cleaner shall be free from objectionable odor and from poisonous or irritant chemicals.

Each bidder shall submit with his proposal for Type I and Type II. Class A, materials a sample of the material that he proposes to furnish. Each sample shall be labeled to show the amount recommended for softening 10 gallons of water containing 10 grains (171 p.p.m.) of hardness, calculated as $CaCO_3$, and may be used by the inspector or purchasing officer in the recommended proportions for determining the performance or cleaning ability of the material.

Samples from deliveries shall be subjected to similar tests. If specified by the purchasing officer, the material, when used in the proportions recommended by the bidder, shall be at least equal in cleaning ability to a standard sample furnished, or indicated, by the purchasing officer.

Type I. Detergent for use in mechanical dishwashing machines shall conform to the following detail requirements: *Turbidity* — When tested by the method described in paragraph F-2b (1), (See complete specifications) the weight of the precipitate obtained shall be less than 20 mg. for 250 ml of solution. *Foaming*—When tested by the method described in paragraph F-2c, no foam or suds shall be detected. *Corrosion*—when tested by the method described in paragraph F-2f (1), the detergent solution shall be without visible action on bare or anodic oxide-coated aluminum alloy. *Water-Softening Capacity*—A suds which is stable for not less than 5 minutes shall be formed when the material is tested as described in paragraph F-2d. *Hydrogen Ion Content and Buffer Index*—When tested by the method outlined in paragraph F-2g, the

detergent solution shall have an initial pH of not less than 10.0, and shall have a pH of less than 9.0 after the addition of the specified amount of hydrochloric acid solution. *Cleaning Ability*—The material shall clean satisfactorily when tested as indicated in paragraph F-2a. The relative cost of the detergent shall be determined from the product of the delivered price per pound of the detergent and the number of pounds of the detergent required to treat 1000 gallons of water containing 10 grains (171 p.p.m.) per gallon of hardness, calculated as $CaCO_3$. The amount of detergent used in this computation shall be that required to give the concentration used in paragraphs F-2b (1) and F-2d of this specification.

Type II, Class A. Non-Abrasive Cleaner shall conform to the following detail requirements:

Turbidity—The turbidity of the cleaner solution shall conform to the test described in paragraph F-2b (2). (See complete Specification.) *Corrosion*—When tested by the method described in paragraph F-2f (2), the cleaner solution shall be without visible action on bare or anodic oxide-coated aluminum alloy. *Water Softening Capacity* — A suds which is stable for not less than 5 minutes shall be formed when the material is tested as described in paragraph F-2e. *Hydrogen Ion Content*—The pH of a 1 per cent solution by weight of the cleaner in distilled water shall not exceed 10.5 when measured as indicated in paragraph F-2h. *Cleaning Ability*—The material shall clean satisfactorily when tested as indicated in paragraph F-2a. Total glycerol content shall not exceed 0.8 per cent of the weight of anhydrous soap contained in this product, following the methods given in section F of Federal Specification P-S-536. *Relative Cost*—The relative cost of the cleaner shall be determined from the product of the delivered price per pound of the cleaner and the number of pounds of the cleaner required to treat 1000 gallons of water containing 10 grains (171 p.p.m.) per gallon of hardness, calculated as $CaCO_3$. The amount of cleaner used in this computation shall be that required to give the concentration used in paragraphs F-2b (2) and F-2e of this specification.

Type II, Class B. Abrasive Cleaner shall conform to the following detail requirements: *Abrasion* —When tested by the method described in paragraph F-2i (See complete Specification) the cleaner shall produce no undesirable scratching. *Corrosion*—When tested by the method described in paragraph F-2f (3), the cleaner shall be without visible action on bare or anodic oxide-coated aluminum alloy. *Rinsibility*—When tested by the method described in paragraph F-2j, the cleaner shall be removed completely from a glass plate. *Cleaning Ability* —The material shall clean satisfactorily when tested as indicated in paragraph F-2a.

Sweeping Compound (P-C-591a)

Sweeping compound shall consist of a uniform mixture of the materials as specified for each type and shall be artificially colored or uncolored as specified by the purchaser. If desired, shall conform to the color of a sample mutually agreed upon by buyer and seller. The material shall not stain flooring surfaces on which it is used.

Type I. — Sawdust- Sand-Mineral Oil.

Odor shall not be objectionable. If desired shall conform to the odor of a sample mutually agreed upon by buyer and seller. The material shall not give off flammable vapors when tested according to paragraph F-2b. Matter volatile at 105-110° C. shall be not more than 10 per cent by weight. Refined mineral oil (such as paraffin oil) shall be not less than 15 per cent and not more than 20 per cent by weight. Clean, fine, sharp sand or feldspar sand shall be not less than 35 per cent and not more than 50 per cent by weight. Not more than 1 per cent by weight of sand (based on sand content) shall be retained on a No. 20 sieve when tested according to paragraph F-2k. Fatty oils shall not be present. The remainder shall be finely ground sawdust. Not more than 1 per cent by weight of sawdust (based on sawdust content) shall be retained on a No. 8 sieve when tested according to paragraph F-2k.

Type II — Sawdust-Sand-Water wax emulsion.

Odor shall not be objectionable. If desired shall conform to the odor of a sample mutually agreed upon by buyer and seller. The material shall not give off flammable vapors when tested according to paragraph F-2b. Matter volatile at 105-110° C. shall be not more than 12 per cent by weight. Clean, fine, sharp sand, or feldspar sand shall be not less than 60 per cent and not more than 70 per cent by weight. Not more than 1 per cent by weight of sand (based on sand content) shall be retained on a No. 20 sieve when tested according to paragraph F-2k. Finely ground sawdust shall be not less than 5 per cent and not more than 10 per cent by weight. Not more than 1 per cent by weight of sawdust (based on sawdust content) shall be retained on a No. 8 sieve when tested according to paragraph F-2k. The remainder shall be waxes and emulsifying agents.

Liquid Automobile Polish (P-P-546)

Shall be suitable for use on lacquer, baked enamel and synthetic enamel finishes. Shall have no objectionable odor. Shall be a stable aqueous emulsion containing a suitable abrasive in suspension. The polish shall be a free-flowing fluid that can readily be applied with a cotton cloth and shall spread easily. Non-volatile matter, total solids, shall be not less than 25 per cent by weight. Ash content, based on non-volatile, shall be not less than 35 per cent nor more than 50 per cent by weight. No free caustic alkali. Neutralization number shall be not more than 5. All of the material shall pass through a No. 200 sieve, and not less than 95 per

cent, based on ash content, shall pass through a No. 325 sieve. Volatile matter shall be essentially water. Physical and performance tests are also specified.

Liquid Furniture Polish (P-P-552)

The polish shall be free from abrasives and suitable for use on finishes on wood and metal furniture. It shall have no objectionable odor. It shall be a stable colloidal emulsion of oil in water. It shall be a free-flowing fluid that can readily be applied with a cotton cloth and easily spread. Non-volatile matter shall be not less than 40 per cent by weight, and shall be essentially a well-refined petroleum oil. Ash content, based on non-volatile matter, shall be not more than 1 per cent by weight. Volatile matter shall be essentially water. No free caustic alkali shall be present. The saponification number shall be not more than 30. Physical and performance tests are also specified.

Metal Polish (P-P-556a)

Metal polish shall be of the following types:

Type I. Powder.
Type II. Liquid
Type III. Paste.

Metal polish of each type shall be of but one grade. It shall be a product, with or without a finely divided abrasive, suitable for the removal of tarnish from brass, nickel, copper, and other metals and capable of producing a luster thereon.

All types of metal polish shall have good tarnish removing properties, good luster-producing properties, shall give good protection to the polished surface against tarnishing influences, and shall be so constituted and prepared that, by reason of application and polishing, they—

(1) Shall not scratch metals.

(2) Shall not leave the metal discolored or caked with abrasive material.

(3) Shall not be detrimental in any manner to metals.

(4) Shall not show any unnecessary caking of type I or III polish in the containers. The abrasive material in liquid (Type II) polish, shall show no caking in the container, which cannot be readily put into suspension by thoroughly shaking the containers. The abrasive material shall be of such particle size that 100 per cent will pass through a No. 200 sieve.

Metal polish shall be free from acids, cyanide of potassium or other cyanides, grit, or other ingredients having detrimental effects on metals. Shall clean quickly, leaving a bright polished surface, with a full luster for the material being polished. When so specified the tarnish-removing and luster-producing properties shall be equal in quality to those of a standard sample furnished or approved by the purchaser. The polished surface shall remain free from corrosion or discoloration for a period of at least 24 hours.

Polish shall have good keeping qualities and be guaranteed for 1 year from the date of actual receipt at point of delivery. During the guaranty period the successful bidder shall replace without cost any metal polish which through deterioration, evaporation, caking in the container, or other causes, becomes unfit for use. Replacement metal polish shall also be guaranteed for 1 year from date of receipt. The metal polish will be stored in original unopened shipping containers, not subjected to freezing temperature or to excessive artificial heat. The amount of volatile matter, at 105° to 107° C., in either type II or III polish, shall not exceed 70 per cent by weight, of the polish. The flammability of the liquid contents of types II and III polishes shall not be not less than 39° C.

Silver Polish (P-P-571b)

Silver polish shall be of the following types:

Type I. Liquid.
Type II. Paste.
Type III. Powder.

Silver polish shall be of but one grade, and shall consist solely of finely ground diatomaceous or infusorial earth, prepared as a powder (Type III) or suitably compounded with a neutral soap, to produce a liquid (Type I) or paste (Type II).

All types of silver polish shall have—

(a) Good tarnish-removing properties.

(b) Good luster-producing properties and shall be so constituted and prepared that by reason of application and polishing, they—

(1) Shall not scratch silverware.

(2) Shall not leave silver discolored.

(3) Shall not leave any residue (which will cause discoloration) not removable by washing in warm soapy water.

(4) Shall not show any unnecessary caking of Type II or III polish in the containers. The abrasive material in liquid (Type I) polish, shall show no caking in the container which cannot be readily put into suspension by thoroughly shaking the containers.

The diatomaceous or infusorial earth in all types of silver polish shall be of such particle size that 100 per cent will pass through a No. 200 sieve.

Silver polish shall be free from acids or cyanides. Shall clean quickly leaving a bright polished surface, with a full luster for the material being polished. It shall have good keeping qualities and be guaranteed for 1 year from the date of actual receipt at point of delivery. During the guaranty period the successful bidder shall replace, without cost, any silver polish which through deterioration, evaporation, caking in the container or other causes, becomes unfit for use. Replacement silver polish shall also be guaranteed for 1 year from date of receipt. The silver polish will be stored in original unopened shipping containers not subjected to freezing temperature or to excessive artificial heat. The amount of volatile matter, at 105° to 107° C., in either Type I or II polish, shall not exceed 70 per cent by weight, of the polish. The flammability of the liquid contents

of Types I and II polishes shall be not less than 39° C.

Stove Polish (P-P-576)

Stove polish shall produce a deep, lustrous black color when applied as directed by the manufacturer. It shall produce no odors upon burning and shall produce a durable coating that will not readily be burned off.

Type I.—Polish, stove, liquid, shall be of such consistency that the addition of a fluid will not be necessary in order to make it free-flowing. The vehicle of the polish shall be a non-inflammable liquid.

Type II. — Polish, stove, paste, shall be non-inflammable and shall be of such consistency that it can be readily applied.

Type III. — Polish, stove, powder, shall readily form a paste with water, and shall be non-inflammable.

Type IV. — Polish, stove, cake, shall readily disintegrate in water and form a paste and shall be non-inflammable.

Scouring Powder for Floors (P-P-591)

Scouring powder for floors shall be of the following types, as specified: Type A—for fine marble floors; Type B—for tile or ceramic and terrazzo floors; Type C—soap scouring compound.

Type A — (For fine marble floors).

Matter volatile at 105° to 110° C. shall not exceed 10 per cent. Deliveries which yield more than 10 per cent of volatile matter shall be rejected without further test. The sum of sodium carbonate (Na_2CO_3) and anhydrous soap shall not exceed 7 per cent nor be less than 2 per cent. Free alkali, calculated as sodium hydroxide (NaOH) shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 85 per cent nor more than 95 per cent. All of the insoluble siliceous material shall pass through a No. 100 sieve, and the residue retained on a No. 200 sieve shall not exceed 5 per cent. The material shall not scratch nor discolor marble. The material shall be a uniform powder, shall be unscented, and shall be of a light gray or white color. Total glycerol content shall not exceed 0.8 per cent of the weight of anhydrous soap contained in this product.

Type B—(For tile or ceramic and terrazzo floors).

Matter volatile at 105° to 110° C. shall not exceed 10 per cent. Deliveries which yield more than 10 per cent of volatile matter shall be rejected without further test. The sum of sodium carbonate (Na_2CO_3) and anhydrous soap shall not be less than 2 per cent. Free alkali, calculated as sodium hydroxide (Na OH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 80 per cent nor more than 95 per cent. The insoluble siliceous material shall not yield more than 1 per cent of residue retained on a No. 60 sieve and not more than 10 per cent of residue retained on a No. 80 sieve. The material shall be a uniform powder, shall be unscented, and shall be of a light-gray or white color. Total glycerol content shall not exceed 0.8 per cent of the weight of anhydrous soap contained in this product.

Type C — (Soap scouring compound).

Matter volatile at 105° to 110° C. shall not exceed 6 per cent. Deliveries which yield more than 6 per cent of volatile matter shall be rejected without further test. Carbonated alkali, calculated as sodium carbonate (Na_2CO_3) shall not be less than 6 per cent nor more than 20 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Anhydrous soap shall be not less than 3 per cent nor more than 10 per cent. Insoluble siliceous material shall be not less than 60 per cent nor more than 90 per cent. The insoluble siliceous material shall not yield more than 1 per cent of residue retained on a No. 60 sieve and not more than 10 per cent of residue retained on a No. 80 sieve. The material shall be a uniform powder, shall be unscented, and shall be light-gray or white in color. Total glycerol content shall not exceed 0.8 per cent of the weight of anhydrous soap contained in this product.

Scouring Powder for Glass (P-P-596a)

Shall be a fine, uniform powder, and shall be suitable for cleaning highly polished glass surfaces which must transmit light efficiently, such as cabin windows and windshields of aircraft.

The material shall clean glass surfaces satisfactorily without scratching the glass or leaving an oily or other film on the surface. The material shall be a uniform, free-flowing powder, shall be scented or unscented, and shall be white or light gray in color. Matter volatile at 105° ±2° C. shall not exceed 4 per cent. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate (Na_2CO_3), shall not exceed 5 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 85 per cent nor more than 93 per cent, and shall consist of ground feldspar or other insoluble siliceous abrasive that will not scratch highly polished glass surfaces. All of the insoluble siliceous material shall pass through a No. 200 sieve. Rosin, sugar, and foreign matter shall not be present. Anhydrous soda soap shall be not less than 4 per cent and shall be within 1 per cent of the difference between 100 and the sum of the matter volatile at 105° ±2° C., insoluble siliceous material, and alkali as alkaline salts. Total glycerol content shall not exceed 0.8 per cent of the weight of anhydrous soap contained in this product.

Floor Oil; Mineral (P-O-361)

Floor oil shall be a straight-run petroleum distillate suitable for use on wood floors. It shall have no objectionable odor; and may be perfumed with cedar oil, pine oil, or similar materials, when specified. It shall be a clear well-defined petroleum oil free from sediment and other foreign material, and shall meet the following requirements:

No Wax Formula known to science can duplicate SUPER WAX

★ When you sell SUPER-WAX you're *not* selling a *formula wax*. You're selling a self-polishing wax that starts out with a higher gloss and holds on to that gloss without getting slippery as a ski run.

★ You're selling a waterproof Carnauba-rich wax that doesn't have to be peeled, skinned or chipped off when the time comes to remove it.

★ What you're presenting is a lighter, transluscent, self-healing wax that's about as close to being non-skid as a water emulsion wax has yet achieved. Only this one doesn't get sticky or tacky—and it won't milk or soap up under tracked in slush.

★ This SUPER-WAX can be drenched and scrubbed with warm water 30 minutes after it dries. It's still a shining delight after a score of washings (but any good wax remover can take it off in a hurry).

★ You don't ever have to worry about it bleeding the colors on asphalt tile. This wax is chemically stable, inert, *harmproof*.

★ Let them use it on painted or slate floors. Here is one wax that clings to ANY surface. And it doesn't finger-print every stray pair of rubber heels.

★ Call on the man with large areas of linoleum—battleship, inlaid, or print—the fellow whose floors are chalk dry from spilled disinfectants, alcohol or what have you . . . SUPER-WAX will actually *rejuvenate* those floors for him. It will replace the dried out, dead and crumbled binders and restore the original elasticity and life.

★ Sell SUPER-WAX to the man with rubber floors and his troubles from water stain and ground in dirt are gone forever—or at least as long as he keeps on getting SUPER-WAX, and not a substitute . . . For the plain fact is, *there is no substitute for* SUPER-WAX.

★ No formula known to Science can duplicate it. We could publish our formula here in Soap—down to the last dram of water—and there isn't a wax maker in America rash enough to claim he could match it.

★ For SUPER-WAX is the product of *wax making method*—not formula . . . The special way the Carnauba content is deep chilled for fine dispersion—the emulsifying technique by which we retain Carnauba's original toughness, wear and non-slip—the slow painstaking additions of just the right amount of wetting agents (to enhance its spread and leveling advantages)—these are but a few of the techniques that go into making SUPER-WAX what it is.

★ They are no more secret than is a performance by Heifetz. Anyone can buy a ticket to hear him . . . and any responsible jobber can get a seat on the SUPER-WAX Band Wagon . . . Complete sales data and generous sample on request.

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The viscosity shall be not less than 70 nor more than 110 seconds (Saybolt Universal) at 100°F. The flash point shall be not less than 300°F. (open cup). The color shall be not darker than 3 N. P. A. (Lemon pale) (ASTM No. 3). The pour point shall be not more than 30°F. The saponification number shall not exceed 1.

Floor Wax; Solvent-Type, Liquid (P-W-134)

The liquid wax shall dry to a film that polishes easily to a hard lustrous flexible surface. It shall not be so highly colored as to stain the surface, and shall dry within 45 minutes to a semi-transparent, nontacky film which shall show no signs of whiteness. It shall consist essentially of blended waxes with small amounts of resins in a volatile organic solvent. It shall be a heavy bodied liquid mixture of sufficient fluidity to permit freedom of application at 20° to 25° C. There shall be no appreciable settling of the suspended material. The liquid wax shall be smooth and shall be free from hard particles and granules.

Nonvolatile Matter (Total Solids).—There shall be not less than 11%, by weight, of nonvolatile matter in the liquid wax. The nonvolatile material shall meet the requirements shown in the table below:

Volatile Organic Solvent (Vehicle).—Shall consist of turpentine or volatile petroleum distillates, or any mixture thereof. The flash point of the volatile solvent shall be not less than 28° C. (closed cup).

Physical and Performance Tests.—Shall meet tests specified in paragraph F-2b.

Water Emulsion Floor Wax (P-W-151a)

The floor wax shall dry to a non-tacky, lustrous finish without rubbing, buffing, or polishing. The film produced shall adhere firmly to the surface without checking, cracking, or peeling and shall be transparent and practically colorless. The floor wax shall be suitable for use on sealed floors and flooring. It shall have no objectionable odor. It shall be a stable aqueous colloidal emulsion of waxes and resins. The emulsion shall be a free-flowing fluid that can readily be applied with an applicator such as lamb's wool, cotton cloth, or a mop to spread easily and uniformly. The film so applied shall dry to a lustrous finish.

The floor wax shall meet the following requirements:

Nonvolatile matter (total solids).—Shall be not less than 12 per cent.

Wax content and softening point.—The wax content of the total solids shall be not less than 65 per cent, by weight, and shall have a softening point of not less than 77° C.

Ash content (based on nonvolatile matter content).—Shall not exceed 3.5 per cent.

Free caustic alkali—None.

Volatile solvents. — Shall be free from petroleum distillates and other organic volatile solvents.

Dilution properties.—Shall be capable of dilution in any proportion with distilled water without breaking the emulsion.

Physical and performance tests are also provided.

Floor Wax (P-W-158)

The product shall dry to a film that polishes easily to a hard lustrous flexible surface. It shall not be so highly colored as to stain the surface; and shall dry within 45 minutes to a semitransparent non-tacky film which shall show no signs of whiteness. Floor wax shall consist essentially of blended waxes in a volatile organic solvent. It shall be free from rosin.

Type I (liquid).—Shall be a heavy bodied liquid mixture of suitable consistency to permit freedom of application at 20° to 25° C. There shall be no appreciable settling of the suspended material. The liquid wax shall be smooth and shall be free from hard particles and granules. There shall be not less than 11 per cent, by weight, of non-volatile matter in the liquid wax. The nonvolatile matter shall meet the following requirements:

	Minimum	*Maximum*
Softening point	71°C.	—
Acid value	—	8
Saponification value...	20	70
Ash content, per cent..	—	0.5

The vehicle shall consist of turpentine or volatile petroleum distillates, or any mixture thereof. The flash point of the volatile solvent shall be not less than 28° C. (closed cup). Physical and performance tests are also provided.

Type II (paste).—Shall be a semi-solid material at 20° to 25° C. There shall be no separation of liquid from paste. The paste shall be smooth and shall be free from hard particles and granules. There shall be not less than 20 per cent, by weight, of nonvolatile matter in the paste wax. The nonvolatile material shall meet the following requirements:

	Minimum	*Maximum*
Softening point	71°C.	—
Acid value	—	8
Saponification value...	20	70
Ash content, per cent..	—	0.5

The vehicle shall consist of turpentine or volatile petroleum distillates, or any mixture thereof. The flash point of the volatile solvent shall be not less than 28° C. (closed cup). Physical and performance tests are also provided.

Floor Sealer (Lacquer Type) (TT-S-171)

The manufacturer is given wide latitude in the selection of raw material and processes of manufacture, provided that the sealer produced meets the requirements and tests. The product, when applied in accordance with directions shall satisfactorily seal the pores of the wood

Requirements for Non-Volatile in P-W-134

	Minimum	*Maximum*
Softening Point	71° C	..
Acid Value	..	18
Saponification Value	40	85
Iodine Number (WIJS)	15	22
Ash Content, Per Cent	..	0.5

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leaving the wood surface in such condition as to provide a satisfactory foundation for a finishing material such as varnish, liquid or paste wax or water-emulsion wax. It shall be "natural" in color and of sufficient fluidity to permit application with a bristle brush or lamb's wool mop.

The floor sealer shall be a clear liquid free from sediment or suspended matter and shall be of such fluidity that no further thinning will be required. It shall meet the following requirements:

Nonvolatile matter.—Not less than 14 per cent.

Set-to-touch. In not more than 15 minutes.

Dry hard and tough.—In not more than 3 hours.

Nitrocellulose.—Not less than 20 per cent by weight of the nonvolatile content.

Toughness. — Air-dried film on metal shall withstand rapid bending over a rod 3 mm. (⅛ inch) in diameter.

Viscosity. — Not more than 0.220 poise.

Performance tests are also specified.

Wood and Cork Floor Sealers (TT-S-176a)

Floor sealers shall be furnished in one grade and two classes for use on wood and cork floors as follows: Class 1 — minimum nonvolatile content 40 per cent; Class 2 —minimum nonvolatile content 25 per cent. The manufacturer is given wide latitude in the selection of raw materials and processes of manufacture, provided that the sealer produced meets the requirements and tests described in this specification.

When applied in accordance with directions the product shall satisfactorily seal the pores of the flooring by absorption, leaving no apparent surface film and shall provide a satisfactory foundation for a finishing material such as varnish, liquid or paste wax, or water-emulsion wax. Unless otherwise specified, floor sealer shall be furnished "natural" in color. Floor sealer shall have sufficient fluidity to permit application with a bristle brush or lamb's wool mop.

Both classes of sealers shall be nonpigmented materials and shall be capable of being thinned with turpentine or mineral spirits. The respective sealers shall meet the following requirements: *Nonvolatile matter*—Class 1, not less than 40 per cent; Class 2, not less than 25 per cent. *Set to touch*—in not less than 1 hour and not more than 3 hours. *Dry, hard and tough*—in not more than 7 hours. *Water test*—The sealer shall meet specified cold water and boiling water immersion tests.

Toughness—Shall pass a 100 per cent Kauri reduction test at 25° C. (77° F.). *Flash point*—Shall be not below 30° C. (86° F.). (Closed-cup.)

Viscosity at 25° C.—Class 1, not more than 0.50 poise; Class 2, not more than 0.220 poise.

Skinning—Shall be negligible when received and after 48 hours in a tightly closed half-filled container.

Odor—The odor in the can, during drying, and/or after drying shall not be abnormally offensive or disagreeable.

Performance tests are also specified.

Liquid Insecticide (Fly Spray) (O-I-541)

The insecticide shall not cause irritation to men nor be poisonous to man when applied in the usual manner. It shall have no greater detrimental action or metal or paint surface than a specified test solvent. It shall have no objectionable odor. It shall be formulated from a petroleum distillate base, free from kerosene odor and practically free from all odor, shall be clear and free from suspended matter and shall contain active ingredients so that it will test not more than 2 per cent below the O.T.I. in average percentage knockdown and at least 16 per cent above the O.T.I. in average percentage kill.

Initial boiling point shall not be below 350° F. and end point not above 530° F. Flash point shall be not less than 125° F. (closed cup). No residual odor shall be present, under a specified test. The product shall meet specified test for staining properties and corrosion.

Liquid Insecticide (Household) (O-I-546)

The specification follows closely along the lines of the specification for O-I-541, with an addition requirement as follows, covering minimum pyrethrin content. "There shall be not less than 0.10 gram of Pyrethrin I with the normally acompanying amount of Pyrethrin II in 100 ml. of the liquid insecticide. Any additional ingredients which when incorporated in the product will comply with the requirements of this specification may be used to bring the strength of the product up to the performance requirements." The performance test specifies that it must test not more than 2% below the O.T.I. in knockdown and at least equal to the O.T.I. in kill.

Insect Powder (O-P-571)

Insect powder shall consist of the powdered flower heads of Chrysanthemum (Pyrethrum) cinerariaefolium (Trev. Bocc.). It shall be a product resulting from the reduction to an impalpable powder of insect flower heads of the species named and free from added stems and other adulterants. It shall be made of flowers that have been properly harvested and cured so as to retain the maximum insecticidal efficiency and are free from mold, and the powder shall have the characteristic color and odor. It shall not contain insect flower stems in excess of the amount occurring attached to flowers as harvested, and in no case in excess of 5 per cent. It shall not contain more than 2 per cent of ash insoluble in dilute hydrochloric acid.

Sodium Fluoride (O-S-601)

Sodium fluoride shall be a good grade commercial product in the form of a uniform, fine, dry, powder, suitable for dusting, free from lumps or gritty material and practically free from matter insoluble in water. It shall contain not less than 90 per cent of sodium fluoride.

NaF, the remaining 10 per cent to consist of the usual impurities in a good grade of commercial sodium fluoride, such as sodium silico-fluoride, sodium bifluoride, sodium carbonate, sodium chloride, sodium sulfate and added dye. It shall be colored by incorporating with it a suitable organic dye to produce a color ranging from "Pale Nile Blue" to "Nile Blue" as designated by Ridgeway's Color Standards.

Shaving Cream and Soap (FFF-C-641)

Shaving soap and cream shall be of the following types and classes:

Type I. Soap:
- Class (A)—Cakes.
- Class (B)—Stick.
- Class (C)—Powder.

Type II. Cream:
- Class (A)—Lather cream.
- Class (B)—Brushless cream.

Shaving soaps, Type I, shall be high-grade products free of caustic alkalinity that yield a heavy, creamy lather that will remain moist upon the face until the shaving is completed. In the case of Class B (stick), the soap shall adhere to the face when the stick is moistened and rubbed thereon. In the case of class C (powder), the material shall be free-flowing and shall not cake in the container.

Lathering quality (*Class A only*)—shall be satisfactory. Shall conform to the test described above.

Type I. Shaving soap, Classes A, B, and C—shall conform to the detail requirements shown in the accompanying table.

The percentage of volatile matter shall be computed, and reported on the soap as received. The percentages of all other constituents shall be calculated and reported on an assumed volatile matter content of 10 per cent for Classes A and B and of 2 per cent for Class C, except glycerol which shall be calculated and reported on the basis of the anhydrous soap content.

Shaving cream — Class A, shall be a soft, uniform cream or paste free from free alkali. It shall distribute well into the bristles of a shaving brush and shall yield a heavy creamy lather that will remain moist upon the face until the shaving is completed.

Brushless cream—Class B shall be a soft, uniform cream or paste free from free alkali.

Type I. Shaving soap, Classes A, B, and C—

Color—shall be as specified by the purchaser. *Odor*—shall be pleasant and shall be as specified by the purchaser. *Lathering quality*—shall be satisfactory. Shall conform to the following test:

Shake 100 ml of a 0.2 per cent (based on the nonvolatile matter) solution of the soap (Type I, classes, A, B, and C and Type II, class A) in distilled water at room temperature in a stoppered 200-ml graduated cylinder 30 times in 15 seconds, and let stand at room temperature for 1 hour. The volume of foam above the liquid shall extend to the top of the cylinder and shall not decrease more than 10 per cent of its original volume in 1 hour.

Caking (*Class C only*)—The material shall be free-flowing and shall not cake in a closed container at room temperature.

Detail Requirements for Shaving Soap

TYPE I	*Classes A and B cake and stick*		*Class C powder*	
	Min.	*Max.*	*Min.*	*Max.*
	Per Cent	*Per Cent*	*Per Cent*	*Per Cent*
Matter volatile at 105° C.	—	10	—	2
Matter insoluble in hot 95 per cent ethyl alcohol	—	.8	—	.8
Free alkali	—	None	—	None
Free fatty acids (calculated as stearic acid)	—	1.0	—	1.0
Matter insoluble in hot distilled water	—	.4	—	.4
Anhydrous soap (calculated as potash soap)	87	—	96	—
Amount passing a No. 20 sieve	—	—	100	—
Total glycerol content (per cent of anhydrous soap)	—	0.8	—	0.8

Detail Requirements for Shaving Cream

TYPE II	*Class A lather cream*		*Class B brushless cream*	
	Min.	*Max.*	*Min.*	*Max.*
	Per Cent	*Per Cent*	*Per Cent*	*Per Cent*
Moisture (toluene distillation method)	—	50	—	70
Matter insoluble in hot 95 per cent ethyl alcohol	—	.3	—	—
Free alkali	—	None	—	None
Free fatty acid (calculated as stearic acid)	—	6.5	15	—
Matter insoluble in hot distilled water	—	.3	—	—
Anhydrous soap (calculated as potash soap)	40	—	—	—
Total glycerol content (per cent of anhydrous soap)	—	0.8	—	0.8

Type II. Shaving cream. Classes A and B—

Color—shall be as specified by the purchaser. *Odor*—shall be pleasant and shall be as specified by the purchaser.

Technical Trisodium Phosphate (O-T-671a)

Technical trisodium phosphate shall be a white, uniform product and may be either granular, flake, or crystalline.

It shall contain not less than 98 per cent of trisodium phosphate calculated as $Na_3PO_4.12H_2O$, from the total phosphoric anhydride (P_2O_5). It shall conform to the following detail requirements:

	Minimum Per Cent	*Maximum Per Cent*
Trisodium phosphate, calculated as $Na_3PO_4.12H_2O$, from total P_2O_5	98	—
Total alkalinity to methyl orange, calculated as Na_2O	16	19
Phosphoric anhydride (P_2O_5)	18.3	—
Matter insoluble in water	—	0.1

ARMY SOAP SPECIFICATIONS

SOAP, CHIP (*High Titer*)
JCQD No. 26

Chip soap shall be of but one type. It shall be a stable soap in chip (or flake) form made from soda and fats, fatty acids, or mixture thereof; shall be as free from water as practicable; shall be of a light uniform color; shall be free from objectionable odor; shall be suitable for laundering and other washing, cleaning and scouring processes. Total glycerol content shall not exceed 0.8 per cent of the anhydrous soap content.

The material shall conform to the following detail requirements:

	Maximum	*Minimum*
Moisture and matter volatile at 105°C	10.0%	..
Sum of matter insoluble in alcohol (sodium silicate and other alkaline salts) and sodium chloride)	12.0%	
Water soluble sodium silicate (calculated as in Specification P-S-536a)	..	4.0 %
Free alkali, calculated as NaOH	0.5%	..
Unsaponified saponifiable	0.2%	..
Matter insoluble in water	1.5%	..
Anhydrous soap		76.0 %
Titer of mixed fatty acids prepared from the soap		39°C
Iodine number of fatty acids	70	
Copper (parts per million)	10	
Sugar, rosin and other foreign matter	None	
Organic oxidation inhibitors[1]		0.10%

[1] Approved organic oxidation inhibitors are:
(a) diphenylamine
(b) ortho biphenyl biguanidine (Monsanto 326)
(c) para tertiary butyl phenol
para tertiary amyl phenol

Approval for other inhibitors may be obtained through O.Q.M.G.

Stability.—The finished product shall be as resistant to development of rancidity and heating during storage as possible. Product shall have no objectionable odor for a minimum of 20 days when tested according to Sec. F-3.

Computation.—The percentage of moisture and volatile matter shall be on basis of analysis of sample taken at point of manufacture. The percentage of all other constituents shall be calculated and reported on an assumed moisture and volatile matter content of 10 per cent.

Basis of Purchase.—Purchase shall be made on basis of:

$$W = \frac{R \times X \ (100\text{-}L)}{90}$$

when W = net weight of material to be paid for;
R = net weight of material at point of manufacture;
L = percentage loss at 105° C.

The manufacturer is to be given the advantage if the above calculation results in an amount in excess of 100 per cent.

Methods of Sampling, Inspection and Tests

Sampling, inspecting and testing shall be done under direction of Jersey City Quartermaster Depot. Products shall be sampled at point of manufacture. Products shall be sampled and tested, in general, according to the methods contained in Section F of Federal Specification P-S-536 of the issue in effect on date of invitation for bids. Inspection may be made throughout the entire process of manufacture. The passing as satisfactory of any detail of material shall not relieve the contractor of responsibility for faulty workmanship or material which may be discovered at any time prior to final acceptance.

Copper shall be determined according to method given in A.O.A.C. yearbook for 1940, U. S. Pharmacopoeia, or by any other method sufficiently accurate to measure quantities as small as 10 parts per million in size of samples ordinarily used.

Stability Test.—Half fill a glass quart-size fruit jar with the product. Place a 15 x 175 mm test tube, two-thirds full of water, in the center of the soap product so that the bottom of the test tube rests on bottom of the jar, and so the water vapor may freely escape into the jar. Lightly pack the soap product by gentle tapping on table-top; add sufficient soap during tapping so that jar remains half-filled. Seal jar with suitable gasket; be sure that no metal is exposed within jar. Place jar in oven or cabinet and maintain at 125° F. for a period of 20 days. At end of 20 days, remove cover and determine odor. A satisfactory sample must have no objectionable odor.

SOAP, LAUNDRY, POWDERED
(*High Titer*)
JCQD No. 27

Powdered soap shall be of but one type. It shall be a stable soap in powdered form made from soda and fats, fatty acids, or mixture thereof; shall be as free from water as practicable; shall be of a light uniform color; shall be free from objectionable odor; shall be suitable for laundering and other washing, cleaning and scouring processes. Total glycerol content shall not exceed 0.8 per cent of the anhydrous soap content.

The material shall conform to the following detail requirements:

	Maximum	*Minimum*
Moisture and matter volatile at 105°C	6.0%	..
Sum of matter insoluble in alcohol (sodium silicate and other alkaline salts) and sodium chloride	12.0%	
Water soluble sodium silicate (calculated as in Specification P-S-536a)	..	4.0 %
Free alkali calculated as NaOH	0.5%	..
Unsaponified saponifiable	0.2%	..
Matter insoluble in water	1.5%	..
Anhydrous soap		80.0 %
Titer of mixed fatty acids prepared from the soap		39°C
Iodine number of fatty acids	70	
Copper (parts per million)	10	
Sugar, rosin and other foreign matter	None	
Residue retained on a No. 12 sieve	1.5%	
Organic oxidation inhibitors[1]		0.10%

Sections covering stability, computation and basis of purchase for JCQD No. 27 are the same as for No. 26 except that assumed moisture and volatile matter content is 6 per cent rather than 10 per cent. Equation for basis of purchase is

$$W = \frac{R \times X \ (100\text{-}L)}{94}$$

SOAP (*Medium Titer*)
JCQD No. 28

Medium-titer soap shall be of the following classes:

Class I—Powdered;
Class II—Flake or chip.

Medium-titer soap shall be a stable soap, in powder or flake form, made from soda and fats, fatty acids, or mixture thereof; shall be as free from water as practicable; shall be of a light uniform color; shall be free from objectionable odor; shall be suitable for laundering and other washing, cleaning and scouring processes. Total glycerol content shall not exceed 0.8 per cent of the anydrous soap content.

The material shall conform to the following detail requirements:

	Maximum	*Minimum*
Moisture and matter volatile at 105°C	8.0%	
Sum of matter insoluble in alcohol (sodium silicate and other alkaline salts) and sodium chloride	9.0%	
Water soluble sodium silicate (calculated as in Specification P-S-536a)		4.0 %
Free alkali, calculated as NaOH	0.5%	
Unsaponified saponifiable	0.2%	
Matter insoluble in water	1.5%	
Anhydrous soap		81.0 %
Titer of mixed fatty acids prepared from the soap	33°C	
Iodine number of mixed fatty acids prepared from the soap	95	70
Acid number of mixed fatty acids prepared from the soap	210	180
Copper (parts per million)	10	
Sugar, rosin and other foreign matter	None	
Residue retained on a No. 12 sieve (Class I)	1.5%	
Organic oxidation inhibitors[1]		0.10%

Sections covering stability, computation and basis of purchase for JCQD No. 28 are same as above, except that product must continue without objectionable odor for only 15 days, and assumed moisture and volatile matter content is set at 8 per cent. This changes basis of purchase equation to

$$W = \frac{R \times X \ (100\text{-}L)}{92}$$

TOILET SOAP
(*Soft, Hard or Sea Water*)
OQMG No. 100

The following sections from the official specification cover types and grades, as well as general and detailed requirements:

B. TYPES AND GRADES

B-1. Soap, toilet, for use in soft, hard or sea water, shall be of the types and grades specified below. Each type and grade shall meet all the performance and other requirements.

Type I—Framed and stamped bar:

Grade A—Shall contain not more than 10 per cent total inorganic salt;

Grade B—Shall contain not more than 20 per cent total inorganic salt.

Type II—Milled bar:

Grade A—Shall contain not more than 10 per cent total inorganic salt.

Grade B—Shall contain not more than 20 per cent total inorganic salt.

D. GENERAL REQUIREMENTS

D-1. General.

D-1a. Shall be a well-made, homogeneous product within the composition limits specified herein; shall be in bar form of either 2-oz. or 4-oz. weight. Product shall be capable of rendering satisfactory performance in water of any degree hardness from zero to hardness equivalent to sea water, at any temperature between 5°C. and 50°C., for the following uses:

D-1a(1) General purpose toilet soap and shampoo.

D-1a(2) Mess kit and similar equipment cleansing.

D-1a(3) Manual laundering of clothes.

D-1a(4) Shaving soap.

D-1b.—The soap shall be high quality sodium soap made from fats, oils, fatty acids, or mixture thereof, and the stock shall contain a minimum of 10 per cent and a maximum of 30 per cent coconut oil. Soap shall contain no more glycerol, based on anhydrous soap content, than consistent with the Food Distribution Administration requirements for commercial soaps at time of issuing bids. Soap shall have an odor and color characteristic of high quality soap stock.

D-2. **Odor.**—Shall not have an objectionable odor at time of delivery or during use; shall contain sufficient mild perfume to just mask the characteristic odor of the unperfumed product and give the product a bland, neutral odor; shall be similar to approved sample.

D-3. **Appearance.** — The bar shall have a uniform tan color similar to approved sample. Coloring matter used shall not impart color to items washed with the finished bar.

D-4. **Consistency.**—Shall be a firm, non-crumbling bar without evidence of being unduly sticky or abrasive, either initially or during use; shall not be unduly hygroscopic to extent of excessive softening or wasting during use.

D-5. **Solubility and Sudsing.**—Product shall be capable of making a solution or finely divided dispersion in soft, hard or sea water; shall yield a minimum of 50 ml. suds when a 1 per cent concentration in soft, hard or sea water is tested as indicated in F-4.

D-6. **Soil Removal from Skin.**—Shall remove the grease from skin in one washing, as indicated in F-5, in water of any hardness from zero to hardness equivalent to sea water, when tested at 20°C.; shall easily rinse from skin; shall not leave a disagreeable feel to the skin.

D-7. **Bid Samples.** — Twenty-four bars of each size manufacturer proposes to furnish on contract shall be furnished Research & Development Branch, Military Planning Division, O.Q.M.G., free of expense or obligation, at time bid is made, for the purpose of determining compliance with the specification, other than packing, packaging and marking; a similar amount may be required by the Procuring Depot.

D-8. **Dermatitis Test.** — Fifty human test subjects will be used, and each will be patch-tested with the following:

1 cc of a 0.25 per cent concentration of soap in distilled water will be absorbed into a 1-inch square test patch consisting of 4 layers of white cotton muslin. These pieces, while wet, will be applied to the inner surfaces of the forearm and covered over by an occlusive protective coat which will prevent the evaporation of water. The tests will be worn for a period of 48 hours with interpretation of the irritation results being made at the end of each 24-hour period. The site on which the material is used will be plainly marked, and the tests will be repeated on the same individual after a period of two weeks. Erythema or induration at the site of the patch will be considered as evidence of irritating properties in the soap. Not over 14 per cent of the test subject shall show induration, urticaria or erythematous reactions.

E. DETAIL REQUIREMENTS

E-1. **Composition.** — Product may be either framed bar (Type I), or milled bar (Type II). Grade B products shall be procured only when Grade A products are not sufficiently available.

E-1a. The following organic detergents may be used in soap, toilet, soft, hard or sea water: Nacconol HG, HGW or NRSF (National Aniline Division, Allied Chemical & Dye Corp.), Santomerse (Monsanto Chemical Co.), "No. 92" (General Dyestuff Corp.), and MP 646 (Dupont Co.). A minimum of 15 per cent total of these products (anhydrous, salt-free basis) shall be used.

E-1b. The following wetting and foaming agents may be used up to a maximum amount of 10 per cent total of these products (anhydrous, salt-free basis): Ultrawet (Atlantic Refining Co.), and MP 634 (Dupont Co.).

E-2. **Computation.** — The percentage of matter volatile at 105°C. shall be on basis of sample taken at point of manufacture at time of packing. The percentages of all other constituents shall be calculated and reported on an assumed volatile matter content as follows:

Type I (framed) 22.0%
Type II (milled) 10.0%

E-3. **Basis of Purchase.**—Shall be specified for each type. For material which conforms with all requirements, the net weight of the material to be paid for shall be calculated as follows:

E-3a. **Type I (framed).** — If more than 25.0 per cent volatile matter at 105°C., material shall be rejected without further test; if 25 per cent or less, settlement shall be made on basis of product containing 22.0 per cent volatile matter.

$$W = \frac{R \times (100 - L.)}{78}$$

E-3b. **Type II (milled).** — If more than 12.0 per cent volatile matter at 105°C., material shall be rejected without further test; if 12.0 per cent or less, settlement shall be made on basis of product containing 10.0 per cent volatile matter.

$$W = \frac{R \times (100 - L.)}{90}$$

Where: W = Net weight of material to be paid for
R = Net Weight of material at point of manufacture
L = Percentage moisture and volatile matter at 105°C.

E-4. **Composition**

	Percent by Weight	
	Minimum	Maximum
Total organic detergent & foaming agent (anhydrous, salt-free)	25.0	35.0
Soda Soap, Anhydrous	25.0	...
Moisture and matter volatile at 105°C. (Type I)	...	25.0
Moisture and matter volatile at 105°C. (Type II)	...	12.0
Inorganic Salts (Grade A)	...	10.0
Inorganic Salts (Grade B)	...	20.0
Alkaline Salts, calculated as Na_2CO_3-Na_2SiO_3	...	0.3
Sodium Silicate, calculated as Na_2SiO_3	...	1.5
Free alkali, calculated as NaOH	...	0.1
Free Acid, calculated as $C_{11}H_{23}COOH$	...	0.2
Unsaponifiable matter	...	2.5
Matter insoluble in water	...	1.0
Rosin, calculated as $C_{19}H_{29}COONa$	...	2.0
Sugar		None

Perfume .....To match approved sample.
Organic oxidation inhibitor*..... 0.05

* Approved organic oxidation inhibitors are:
(a) diphenylamine
(b) ortho biphenyl biguanidine (Monsanto 326)
(c) para tertiary butyl phenol
(d) para tertiary amyl phenol
(e) "Iphol" (Colgate-Palmolive-Peet Co.)

DISINFECTANT SPECIFICATIONS
ARMY and NAVY

DISINFECTANT, GERMICIDE AND FUNGICIDE.

Army Medical Department Tentative Specification No. 3018-C.

Disinfectant, in accordance with this specification shall be furnished in the following types and classes, as specified in the invitation for bids:

Type A—For surgical use as a germicide and fungicide (Water solution).

Type B—For general disinfectant and fungicidal use (Water solution).

Type C.—For surgical use as a germicide and fungicide (Tincture).

Unless otherwise specified, Type A and B may be in capsule, liquid, semi-solid, dry powder or tablet form. Type C, unless otherwise specified, shall be furnished in 1:500 strength tincture.

Classes:

Class I—Phenol of the type comprising alkyl, aryl or alkylaryl phenols, including their chlorinated and/or brominated derivatives.

Class II — Quarternary ammonium compounds..

Class III—Salt of an alkyl amine.

General Requirements

D-1. Tincture.—Shall be in such proportions that the final product will contain not less than 50 per cent ethyl alcohol, U.S.P. (in terms of absolute ethyl alcohol) and 10 per cent Acetone U.S.P., and shall have added soluble dye to tint solution which will mark the area of application. D-2.—When specified in the invitation for bids, Disinfectant, Germicide and/or Fungicide shall contain a suitable anti-rust agent.

Detail Requirements

E-1. Variations.—While it is anticipated that the formulas of the different manufacturers may show variations, it is to be understood that the formulas furnished will conform to the following details to a degree consistent with the function for which they are intended.

E-2. Action on Bacteria of Fungus.

E-2a. Disinfectant (single strength).—Shall destroy the following bacteria and fungus within 10 minutes at a temperature of 20° C. when diluted as indicated below and tested as specified in Paragraph F-2, F-3 and F-4.

Bacteria or fungus	*In water*	*In a 10 per cent solution of normal horse blood serum in water.*
Eberthella typhi (Hopkins strain)	1:1000	1:200
Staphylococcus aureus (F.D.A. No. 209)	1:1000	1:200
Trichophyton rosaceum (No. 659 Sabouraud)	1:100	.....

E-2b. Disinfectant (greater than single strength).—When offered having greater anti-bacterial and anti-fungal strength than required in Paragraph E-2a, a corresponding reduction in the quantity may be made and a correspondingly proper preliminary dilution with water shall be made prior to accomplishing the tests specified in Section F.

E-3. Toxicity.—Minimum lethal dose for intraperitoneal injection shall be greater than 0.1 milliliter per kilogram of body weight, when tested as specified in Paragraph F-5.

E-4. Dermatitis.—Shall not be produced when disinfectant is tested as specified in Paragraph F-6.

E-5. Solution.—Shall be clear or opalescent within the concentration range of 1 to 4 per cent in distilled water at 20° C. (68° F.); when opalescent, solution shall become clear or practically clear upon addition of a few drops of a 10 per cent potassium hydroxide solution.

E-6. Odor—Disinfectant in single strength and disinfectant in greater strength diluted to single strength shall be substantially odorless in a 1:200 dilution in distilled water. The undiluted disinfectant in single strength may have a slight pleasant odor.

E-7. Detergency—Single disinfectant in single strength shall contain not less than 10 per cent by weight of anhydrous soap or the amount of a synthetic detergent yielding equivalent detergency and shall meet the requirements of wetting test in Paragraph F-7. A 1:200 dilution of the disinfectant (single strength) in distilled water shall show killing power against Eberthella typhi and Staphylococcus aureus 2 hours after a detergent is added in proportions suitable for cleaning operations, when tested as specified in Paragraphs F-2, F-2a, F-2b and F-3. The detergent may be selected from any of the following at the contractor's option:

Fatty acid soap

Synthetic detergent

Alkali phosphate

E-8. Non-acceptable ingredients—Disinfectant shall not contain any hypochlorite or peroxide.

E-9. Alkalinity—One per cent solution of the disinfectant in distilled water shall not show a pH in excess of 10.0 when tested at 25 degrees Centigrade; pH shall be determined on a Beckman pH meter employing a glass electrode designated at Type E.

E-10. Containers—Shall meet the applicable requirements of Interstate Commerce Commission Specification 17-E. Unless otherwise specified, contractor shall guarantee in writing to concerned procuring officer that container furnished shall be so constructed and of such quality that the container will not react with disinfectant or affect its stability.

E-10a. Tin container—Shall be conventional varnish can design with square corners, body paneled top and bottom countersunk and paneled. Top shall have round, centrally located neck, suitably threaded to accept two complete turns of the cap. Can shall be properly grooved to permit tightly grooved fit on the neck, and shall be composition lined and faced with material which shall protect and prevent a reaction with closure. Dimensions shall be approximately the following:

Width	2⅝ inches
Depth	4⅛ inches
Body	5¾ inches
Overall height	6¼ inches
Neck, diameter	1 inch
Neck, height	⅝ inch
Capacity	1 quart

E-10b. Drum—Shall have a collapsible spout, and when not in use shall fold inside the can. Shall have "U-Press-It" cap. Shall be designed to permit stable stacking. Shall be 5-gallon capacity. Shall be Wilson & Bennett or Wheeling Corrugating Company's drum or equal.

E-10c. Bottle—Shall be 1-quart capacity.

E-11. Marking—Each container shall permanently and legibly bear the name or trade-mark of the manufacturer or contractor; shall similarly bear the lot number; shall similarly bear adequate statements concerning (1) amount and type of suitable detergent which may be added, (2) incompatibilities and (3) precautions. Each container shall permanently and legibly bear directions for the preparation of dilutions for the following specified purposes:

(a) Cold disinfection of surgical instruments.
(b) General ward use.
(c) Use on intact skin.
(d) Disinfection of clothing and other material.
(e) Anti-fungal use.
(f) Surgical use.

Methods of Inspection, Tests, Etc.

F-1. Sampling—Samples shall be selected to yield a composite sample, one quart of which shall be retained by the Purchasing and Contracting Officer, and two quarts of which shall be forwarded for testing. The composite sample shall be obtained from items which represent approximately 5 per cent of the delivery of each lot.

F-2. Bactericidal properties.

F-2a. Test Cultures—Shall conform to applicable requirements of U. S. Department of Agriculture Circular No. 198.

F-2b. Test procedure—Shall meet applicable requirements of U. S. Department of Agriculture Circular No. 198.

F-3. Bacteriostatic properties — Shall be determined as follows: Beginning at the end of test procedure (F-2b), a second transfer of 4 loopfuls is made from the subculture tube to a sub-subculture tube of 10 milliliters of broth, in order to distinguish between bactericidal and bacteriostatic effects. Subculture and sub-subculture tubes are incubated at 87°C. for 48 hours and then examined for growth. The disinfectant shall not be accepted as meeting killing requirements of Paragraph E-1a if growth appears in the sub-subculture tubes indicating bacteriostatic action.

F-4. Fungicidal properties—The test procedure shall meet the applicable requirements of method adapted by Disinfectant Scientific Committee of the National Association of Insecticide and Disinfectant Manufacturers (J. Bacteriology, 42:225, 1941).

F-5. Toxicity—Six healthy, albino male rats, weighing between 150 and 200 grams, or six healthy, adult rabbits, weighing between 2 and 3 kg. shall be used for each toxicity test. The hair is clipped from the portion of the abdomen where the inoculation is to be made. The skin is then shaved, washed and surgically cleansed. The animal is held down during injection in order to reduce liability of injury to the intestines. The needle of a graduated hypodermic syringe containing the dose in a 1:5 dilution in water is inserted into the peritoneal cavity and the dose is injected slowly. The needle is removed. The animal is given its usual food and water and observed for effects for 24 hours. All animals shall survive.

F-6. Dermatitis — Both sides of a healthy, adult albino rabbit, weighing between 2 and 3.5 kg., shall be clipped and shaved. Pads of gauze of equal size, and approximately 1 inch square, shall be prepared. One pad shall be saturated with a 1:50 dilution in water of the product (standard strength) and fastened to one side of the animal. For Type A and C, a second pad shall be saturated with the product in a 1:5 dilution of the standard strength and fastened to the animal in an adjacent position. Another pad shall be saturated with a 1:50 dilution in water of liquor cresolis saponatus, U.S.P. XI, and a final pad with sterile distilled water. Both of these pads shall be fastened to the other side of the animal. The pads shall be completely covered with waterproof adhesive tape. At the end of 8 hours the pads shall be removed and the areas compared for irritation. The product under test shall not have caused any more dermatitis than the maximum of the other patch tests.

F-7. Wetting time, for canvas disk:

F-7a. Apparatus—The apparatus required consists of A Gooch funnel, 1.5 inch in diameter with a barrel 3 inches long and a 600 ml. Griffin low-form beaker. Means shall be provided for maintaining the solution under test at 25°C. + 1°C. The canvas disks shall be punched out by means of a 1 inch diameter steel die from canvas meeting the following requirements:

Material	Cotton
Weave	Plain
Ply-warp	3
Ply-fill	3
Thread count-warp	49 + 2 per inch
Thread count-fill	24 + 2 per inch
Weight per square yard	13 + 0.5 ounces
Wetting time for a 1:225 dilution in distilled water of liquor cresolis saponatus, U.S.P. XI	60 + 10 secs.

The discs shall be kept free from oil or other foreign matter prior to use.

F-7b. Procedure—The temperature of the solution shall be adjusted to and maintained at 25°C. throughout the test. Pour 500 ml. of the solution into the 600 ml. beaker containing the inverted funnel as illustrated by Figure 1. Working rapidly, the Gooch Funnel shall be removed from the solution, a canvas disk placed in the funnel and the funnel, together with the disk again inverted in the solution. The funnel shall immerse the canvas disk in the solution to a depth of about 0.5 inch, while the height of the disk above the bottom of the funnel is approximately 3 inches as illustrated by Figure 1. The wetting time shall be taken as the time elapsing from the moment the canvas disk first enters the solution until in moving downward, it reaches the bottom of the beaker. The average of at least 3 determinations shall be used.

BUREAU OF SHIPS SPECIFICATION
51D6 (INT)
FOR DISINFECTANT, GERMICIDE, AND FUNGICIDE
FEDERAL SPECIFICATION

Disinfectant, germicide, and fungicide, covered by this specification, shall be of but one type. Unless otherwise specified, the product may be furnished in liquid, paste, dry powder, or tablet form. Where liquid is supplied, the solvent or solvent mixture shall contain water as the principal ingredient.

E-2. *Bactericidal and fungicidal action.*

E-2a. *Standard strength.*—The product shall destroy the following bacteria and fungus within 10 minutes at 20° C. (68° F.) when diluted as indicated below:

Bacteria and fungus	*Dilution (by volume)*	*In water*	*In a 10 per cent solution of normal horse blood serum in water*
Eberthella typhosa (Hopkins strain)	1:1000		1:200
Staphylococcus aureus (F.D.A. No. 209)	1:1000		1:200
Trichophyton rosaceum (No. 659 Sabouraud)	1.200		——

E-2b. *Products of greater than standard strength.*—Where products 2, 3 or more integral times the bactericidal and fungicidal strength required by paragraph E-2a are offered, a corresponding reduction in the quantities and a corresponding preliminary dilution with water shall be made before making the tests specified in section F.

E-3. *Use with detergents.*—The product shall destroy Eberthella typhosa (Hopkins strain) and Staphylococcus aureus (F.D.A. No. 209) in a 1:200 dilution within 10 minutes when tested in the presence of trisodium phosphate specified in paragraph F-2c.

E-4. *Toxicity.*—An intraperitoneal injection of 0.3 ml of the product (standard strength) per kilogram of body weight shall not kill more than 5 of a test group of 10 rats when tested as specified in paragraph F-2d ($LD_{50} = 0.3$ or more ml/kg of body weight).

E-5. *Dermatitis.*—The product (standard strength) shall not cause dermatitis when diluted and tested as specified in paragraph F-2e.

E-6. *Hydrogen ion concentration (pH value).*—A 1:100 dilution of the product (standard strength) in distilled water shall show a pH of not less than 6.5 nor more than 10.0 at 25° C. (77° F.) when tested as specified in paragraph F-2f.

E-7. *Solubility.*—The product shall form clear solutions in use dilutions in distilled water.

E-8. *Effect on plastics, rubber, and metals.*—A 1:100 dilution of the product (standard strength) shall show no more deleterious effects than distilled water on plastics, rubber, and metals when tested as specified in paragraph F-2g.

E-9. *Odor.* The product (as supplied) shall be substantially odorless when diluted 1:200 with water. The undiluted product may have a slight pleasant odor.

E-10. *Excluded as ingredients.*—The product shall not contain mercury compounds, hypochlorites or peroxides.

E-11. *Stability.*—The product (as supplied) shall not show appreciable loss in germicidal or fungicidal value during 1 year of storage under normal service conditions.

E-12. *Measuring device.* — Each container shall be provided with a suitable measuring device for making 1 gallon of diluted product of the proper concentration for use. This measuring device shall be chained to the container or made a part of the closure.

E-13. *Directions for use.*—The container shall be clearly labeled with directions for use. Labels shall be approved by the Bureau of Medicine and Surgery (see par. F-2). The label shall include the following:

(a) Brand name.
(b) Active ingredients.
(c) Inert ingredients.
(d) Multiple of standard strength and specification number (see par. E-2b).
(e) A precaution that the product must be diluted as directed before use.
(f) Any other precautions regarding its use, including incompatibility with any common types of detergents (to be specified by name).
(g) A "use table" indicating dilutions for the following typical uses, for quick reference purposes. If one dilution serves for most uses, a statement to this effect shall be made and the exceptions specifically indicated:
  General disinfectant uses.
  Disinfecting surgical instruments.
  Disinfecting gas masks and other personal equipment.
  Disinfecting clothing prior to laundrying.
  Disinfecting washrooms and toilets.
  Anti-fungal uses.
  Use with specified detergents for cleaning.
(h) A dilution table giving the amount of product to add to a gallon of water to make the dilutions stated in the "use table," indicating the quantities in measures (see par. E-12), fluid ounces, and teaspoonfuls or tablespoonfuls. Dilutions in milliliters per liter shall also be given.
(i) Special instructions for the most effective use for the purposes given in (g) above.

E-14. *Manufacturer's records.* — The manufacturer shall place a control (lot) number on each container which can be verified against the manufacturer's records of all tests made on the solution. These records shall be made available for inspection by any duly authorized official of the Navy.

F. METHODS OF SAMPLING, INSPECTION, AND TESTS.

F-1. *Sampling.*—Two samples of the product shall be taken by the Naval inspector from each lot offered for delivery, provided the lot was filled from one batch of the product. If the lot was filled from more than one batch, two samples shall be taken from each batch. Samples shall be 1 pint for liquid form and 1 pound for solid form products, and shall be placed in clean, dry bottles, which shall be tightly closed and sealed. The samples shall be shipped to the Test Laboratory, Navy Yard, Philadelphia, Pa., for test purposes.

F-2. *Type or brand approval tests (at a Government laboratory.* — Type or brand approval tests shall be made of products to determine suitability for Naval use. At the time samples are submitted to the laboratory for approval tests, the manufacturer shall submit two copies of his proposed label (see par. E-13). A copy of the label shall be forwarded by the laboratory to the Bureau of Medicine and Surgery for approval. Unless otherwise specified, tests of samples for approval shall be conducted as follows:

F-2a. *Bactericidal properties.*[1]—

F-2a(1). *Test cultures and culture media.*—The product shall be tested in the dilutions specified in paragraph E-2a against Eberthella typhosa (Hopkins strain) and Staphylococcus aureus (F.D.A. No. 209) at 20° C. (68° F.). The bacteria shall be 22- to 26-hour cultures, incubated and grown in nutrient broth at 37° C. (98.6° F.). The subculture broth shall consist of the following: 5 gm of beef extract, 5 gm of c.p. sodium chloride, and 10 gm of peptone in 1,000 ml of distilled water. The mixture shall be boiled for 20 minutes, made up to original volume with distilled water, adjusted to pH 6.8, and filtered through filter paper. Ten ml portions shall be placed in test tubes which shall then be plugged with cotton and sterilized at 15 pounds pressure for 40 minutes. The stock culture shall be carried on agar slants, the medium consisting of the above described broth plus 1.5 per cent bacto-agar and adjusted to pH 7.2 to 7.4. The medium shall be filtered, tubed, plugged with cotton, sterilized, and slanted. The stock culture shall be transferred once a month. Test organism shall be taken from a month-old stock culture and transfered daily to fresh broth. This daily transfer broth shall be similar to the above broth except that it shall contain only 3 gm of beef extract. The culture should be suitable for tests after four or five daily transfers. After one month, test cultures shall be discarded and new cultures started from stock culture. All transfers shall be made with a singleloop needle, having a loop 4 mm inside diameter, of 0.0226-inch diameter platinum or chromel wire. The loop shall be heated to red heat in a Bunsen flame before each transfer.

F-2a(2). *Test procedure.* A phenol control shall be run to determine whether the test culture has the required resistance. The phenol used shall meet the requirements of the United States Pharmacopoeia and shall have a congealing point above 40° C. (104° F.). Tests shall be run in triplicate as a check. The specified dilutions of product and phenol shall be made up in volumetric flasks and three tubes containing 5 ml portions shall be prepared from each dilution. The tubes shall be placed in a water bath at 20° C. (68° F.) until the contents assume this temperature. Five-tenths ml of test culture shall be added to each tube from a pipette, the time being noted, and each tube shall be immediately agitated. The culture shall be shaken 15 minutes before use and allowed to settle. Its temperature shall be 20° C. (68° F.) at the time of transfer. At the end of 5-, 10-, and 15-minute intervals a loopful of inoculated disinfectant shall be transferred from each tube to a subculture tube containing 10 ml of broth and the subculture tube shall be agitated. A second transfer of four loopfuls shall be made from the subculture tube to a sub-subculture tube of 10 ml of broth, in order to distinguish between bactericidal and bacteristatic effects. Subculture and sub-subculture tubes shall be incubated at 37° C. (98.6° F.) for 48 hours and then examined for growth. The test cultures shall show the following resistance to water dilutions of phenol: (See table below).

F-2b. *Fungicidal properties.*—

F-2b(1). The product shall be tested in the dilution specified in paragraph E-2a against Trichophyton rosaceum at 20° C. (68° F.). The strain of Trichophyton rosaceum used shall be killed by a 1:70 dilution but not by a 1:90 dilution of phenol in 10 minutes when tested as specified in paragraph F-2b(2). The nutrient broth shall be a maltose-peptone broth containing 4 per cent of maltose and 1 per cent peptone (F.D.A. special pepone for testing antiseptic products) and have an adjusted pH of 5.6 to 5.8. The stock culture shall be carried on agar slants, the medium consisting of the above described broth plus 1.5 per cent of powdered agar. Glass beads, 5 to 6 mm in diameter shall be placed in 2-ounce flint bottles to a height of 2 to 3 cm from the bottom and the broth shall be added carefully to fill all the voids between the beads but not to cover them completely. The bottles shall be fitted with cotton plugs and sterilized in an autoclave, with the precautions required for autoclaving sugar media. The bottles shall be inoculated with the stock culture from the agar slant and then placed in an incubator and kept at 28° C. (82.4° F.) for 10 days. At the end of this time the cotton plugs shall be replaced with sterile rubber stoppers and the bottles shaken vigorously for five minutes. Five ml of sterile saline solution shall be added and the bottles again shaken for five minutes; then 15 ml of the sterile saline shall be added, the bottles shaken for three minutes and the contents filtered through a sterile 200-mesh nickel-copper metal sieve. The suspension obtained by filtration shall be standardized using a haemocytometer and counting pipette. The stock suspension shall contain approximately 15,000,000 spores per ml. The standard inoculum shall be obtained by diluting this suspension 1:10.

[1] U. S. Food and Drug Administration Method, Circular No. 198 of the U. S. Department of Agriculture (December, 1931), pages 4 to 10.

Resistance

Culture	Dilution	Minimum — Minutes — 5:10:15			Dilution	Maximum — Minutes — 5:10:15		
Eberthella typhosa	1:90	—	—	—	1:90	+	+	—
Eberthella typhosa	1:100	+	+	—	1:100	+	+	+
Staphylococcus aureaus	1:60	+	—	—	..	..	..	..
Staphylococcus aureus	1:70	+	+	+	..	..	..	..

Note: + indicates growth.
— indicates no growth.

F-2b(2). *Test procedure.* A phenol control shall be run to determine whether the test culture has the required resistance. The phenol used shall meet the requirements of the United States Pharmacopoeia and shall have a congealing point above 40° C. (104° F.). Tests shall be run in triplicate as a check. The specified dilutions of product and phenol shall be made up in volumetric flasks and three tubes containing 5 ml portions shall be prepared from each dilution. The tubes shall be placed in a water bath at 20° C. (68° F.) until the contents assume this temperature. Five-tenths ml of the standard inoculum shall be added to each tube and the time noted. At intervals of 5, 10, and 15 minutes a 4 mm loopful of the organism-test product mixture shall be inoculated into tubes containing 10 ml of the above maltose-peptone broth. The results shall be read after 10 days incubation at 28° C. (82.4° F.).

F-2c. *Use with detergents.*—A 1:200 dilution of the product (standard strength) in distilled water shall be prepared. This is the usual use dilution. To this shall be added 1.0 per cent by weight of trisodium phosphate. The solution shall be maintained at 20° ± 2° C. (68° ± 3.6° F.) for two hours. The solution shall then be tested as specified in paragraph F-2a.

F-2d. *Toxicity.*—Ten healthy adult albino rats, weighing between 150 and 250 gm, shall be used for toxicity tests. None of the animals shall be pregnant. The animals shall be fed as usual. The needle of a 26-gauge (0.015 to 0.017-inch diameter) hypodermic needle on a tuberculin syringe containing 0.3 ml of the product (standard strength) per kilogram of body weight shall be inserted obliquely into the peritoneal cavity. The dose shall be slowly injected and the needle shall then be removed. The animals shall be given their usual food and water and observed for effects for 72 hours.

F-2e. *Dermatitis.*—Five healthy, adult albino rabbits, weighing between 2 and 3.5 kg, shall be used. Both sides shall be closely clipped. (Hair shall not be removed by shaving or depilatories.) Pads of cotton gauze, approximately 1 inch square and 2 layers in thickness, shall be prepared. Pads shall be saturated with 1 ml of the solutions indicated in Table I, and shall be immediately fastened to the proper side of the animal with waterproof adhesive tape or equivalent means. The pads shall be completely covered in order to minimize evaporation. At the end of 8 hours the pads shall be removed. The areas shall be observed at the end of 8, 24, and 72 hours from the start of the test. The product under test shall not have caused more irritation than the maximum of the other patch tests.

F-2f. *Hydrogen ion concentration (pH value).*

F-2f(1). *Apparatus.*—Tests shall be made with a pH electrometer having a sensitivity and readability of 0.05 pH. The sealed type of commercial glass electrode in conjunction with a potassium chloride—calomel reference electrode shall be used. The pH electrometer shall be checked with a standard buffer solution which has been adjusted against a precision hydrogen electrode assembly.

F-2f(2). *Procedure.*—Add 1.0 ml of the product (standard strength) to freshly boiled distilled water, which has been allowed to cool to room temperature, to make a solution of 100 ml. The whole or any portion of this solution may be used for making the pH determination. The value of the hydrogen ion concentration shall be reported to the nearest 0.1 pH value.

F-2g. *Effect on plastics, rubber, and metals.*—A 2-inch square of methacrylate plastic conforming to the requirements of Navy Department Specification 33M1, listed in section A, a rubber glove conforming to the requirements for Grade B of Federal Specification ZZ-G-421, listed in section A, and a 2-inch square of a high carbon, cold-rolled, strip steel having approximately 0.90 per cent carbon, 0.10 per cent silicon, and 0.30 per cent manganese shall be completely immersed in a 1:100 dilution of the product (standard strength) for 48 hours at 20° to 30° C. (68° to 86° F.). A visual examination shall show no more deleterious effect than when the same materials are immersed in distilled water under the same conditions for the same length of time.

F-3. *Inspection tests.*—Tests shall be conducted to determine compliance with the requirements of section E. Unless otherwise specified, at least 1 sample from each order shall be tested by the methods outlined in paragraphs F-2a to F-2e. These tests shall be conducted by a bacteriological laboratory approved by the bureau concerned. Chemical methods of identification may be used to identify other samples as equal to the product upon which approval was granted.

TABLE I. PATCH TESTS

Pad No.	*Solution*	*Position*
1	Sterile distilled water	Right side
2	1:50 dilution in water of liquor cresolis saponatus, U.S.P. XII	Right side
3	1:50 dilution in water of the product (standard strength)	Left side

Commodity Price Regulation No. 1

From Page 169

regulation, or order issued by the Office of Price Administration, or of any acts or practices which constitute such a violation, are urged to communicate with the nearest District, State, Field or Regional Office of the Office of Price Administration, or its principal Office in Washington, D. C.

§ 1386.5 *Exceptions.* (a) An exception to the provisions of this Commodity Practices Regulation No. 1 may be granted to any manufacturer who can establish

(1) That compliance with the provisions of this Commodity Practices Regulation No. 1 will cause him substantial hardship.

(2) That the granting of such exception will not lead to manipulative practices which will defeat or impair the purposes of the Emergency Price Control Act of 1942, and

(3) That the granting of such exception will not lead to evasion of the General Maximum Price Regulation.[1]

(b) Petitions for exception shall be filed in accordance with the provisions of Procedural Regulation No. 1,[2] issued by the Office of Price Administration.

§ 1386.6 *Petitions for amendment.* Persons seeking any modification of this Commodity Practices Regulation No. 1 or an adjustment or exception not provided for herein may file petitions for amendment in accordance with the provisions of Procedural Regulation No. 1[2] issued by the Office of Price Administration.

§ 1386.7 *Applicability.* (a) The provisions of this Commodity Practices Regulation No. 1 shall be applicable only to sales or deliveries of bar or package soaps or cleansers to persons in the United States, its territories and possessions, and the District of Columbia.

(b) The provisions of this Commodity Practices Regulation No. 1 shall not be applicable to sales or deliveries of bar or package soaps or cleansers to the United States or any agency thereof.

§ 1386.8 *Effective date.* This Commodity Practices Regulation No. 1 (§§ 1386.1 to 1386.8, inclusive) shall become effective July 21, 1942.

§ 1386.9 *Report form.* The following report form, OPA Form No. 692-541, copies of which may be obtained on application to the national, regional, or district offices of the Office of Price Administration, or a copy thereof, is to be used in making the reports required by § 1386.1.

Issued this 17th day of July 1942.

LEON HENDERSON,
Administrator.

[1] Supra, note 1.
[2] Supra, note 2.

N.A.I.D.M. SPECIFICATIONS

Official Specifications of the National Association of Insecticide and Disinfectant Manufacturers for

INSECTICIDES and DISINFECTANTS

OFFICIAL SPECIFICATIONS Liquid Household Spray Insecticide

(Adopted December, 1936)

1. A household spray oil type insecticide shall be harmless to man and warm blooded household animals, when used as directed.

2. When sprayed, as directed, it shall not stain fabrics, wall paper and general household furnishings, that are not stained by dry cleaning fluid.

3. When used in the customary manner it shall not contaminate closed packages of food materials commonly found in homes.

4. It shall not corrode metals.

5. It shall have no objectionable odor, and no particular odor shall be specified.

6. It shall have a flashpoint not less than 125° F. when tested in the Tagliabue closed cup.

7. It is recommended that it be purchased on a direct competitive basis with the Official Test Insecticide of the National Association of Insecticide and Disinfectant Manufacturers, Inc., by using the method of test specified in literature accompanying the Official Test Insecticide.

8. The Association hereby adopts the following grades (the plus or minus figures shown therein designating the points over or under the Official Test Control Insecticide when the "Unknown" and the "Control" are tested at the same time in the same manner):

Designation	*Grade*	*Kill Classification*
AA	Excellent	+ 16 or higher
A	Very Good	+ 6 to + 15
B	Equal to Official Test Insecticide	+ 5 to — 5

● ●

1: Standard Specifications for Liquid Hypochlorites Disinfectant, Deodorant and Germicide

Composition—Liquid hypochlorites are available in three forms: *one*, sodium hypochlorite alkaline with sodium hydrate, sodium carbonate or the other alkaline salts; *two*, hypochlorites which are essentially sodium hypochlorite and alkaline with calcium hydrate; and *three*, calcium hypochlorite solutions alkaline with calcium hydrate. A delivery of any one of these shall be satisfactory unless otherwise specified.

Physical Requirements—The hypochlorite solution shall be a homogeneous liquid. It shall be miscible with water of zero hardness at 20° C. (68° F.) in all proportions. It shall be ready for dilution when delivered.

Chemical Requirements—The available chlorine content which shall not be less than 2.5 per cent by weight shall be clearly stated on the label. Its rate of deterioration shall not be more than 10 per cent of its original available chlorine content when stored in the original container for six months in a cool, dark place at maximum temperature of 68° F. (20° C.).

Identification—Each container shall be marked with the name of the material, the brand (if any) of the material, the name of the manufacturer, net contents therein, and date of manufacture.

Packing—The hypochlorite shall be delivered in standard commercial containers of the size as called for in the schedule. Each container holding one gallon or more shall be stoppered with a closure having vent.

2: Standard Specifications for Pine Oil Disinfectant

1. The product shall be manufactured from pure steam distilled pine oil and emulsifying agent and remain clear and homogeneous under normal and reasonable conditions of storage.

2. It shall contain not less than 60 per cent by weight steam distilled pine oil.

3. It shall contain not more than 10 per cent water.

4. The phenol coefficient shall be determined by the F.D.A. Method of Test against B. typhosus and be clearly stated on the label attached to each shipping container.

5. It shall not contain kerosene or other petroleum distillates.

6. The product shall make a stable emulsion in water of zero hardness at 20° C. (68° F.) when diluted at the rate of 5 per cent. The emulsion shall stand for at least twenty-four hours showing no sign of oil float (unsaponified or clear free oil).

3: Standard Specifications for Emulsifying Type Coal Tar Disinfectant

1. It shall be made from phenols of coal tar or petroleum origin, or combinations of such phenols with coal tar oils, and an emulsifying agent.

2. It shall contain not less than 65 per cent by weight of phenols and coal tar oils.

3. It shall contain not over 10 per cent of water, by weight.

4. It shall not contain kerosene or any petroleum distillates other than phenols of petroleum origin.

5. The phenol coefficient shall be determined by the Food and Drug Administration Method using B. typhosus as test organism, and shall be clearly stated on the label attached to each shipping container.[1]

6. It shall make milky emulsions with water of zero hardness at 20° C. (68° F.) when diluted in the ratio of 5 parts of disinfectant to 95 parts of water for disinfectants having phenol coefficients of 10 or under; and in the ratio of 2 parts of disinfectant to 98 parts of water for disinfectants having phenol coefficients of over 10. These emulsions shall show not more than a trace of oily float or sediment when stored for 5 hours at room temperature.

7. It shall remain limpid, showing no sign of naphthalene crystallization down to 0° C. in 3 hours.

8. It shall contain less than 5 per cent of benzophenol.

9. The disinfectant, under normal and reasonable conditions of storage, shall remain stable and show no loss of germicidal value.

Certification and Labeling

10. The following form of statement on labels[2], invoices, etc., is recommended:

"The .....Company certifies this phenolic disinfectant (emulsifying type) to conform to all requirements of the standard adopted by the NATIONAL ASSOCIATION OF INSECTICIDE AND DISINFECTANT MANUFACTURERS, INC., and recorded as Commercial Standard CS70-.... by the National Bureau of Standards of the U. S. Department of Commerce.
Phenol coefficient....."

[1] This type of disinfectant is available with phenol coefficients ranging from 2 to 30, and higher. Contract buyers should specify the phenol coefficient desired.

[2] When used on labels this statement is in addition to, and not in lieu of, the ingredient statement required by the Insecticide Act of 1910.

BAIRD'S CERTIFIED PRODUCTS

COAL TAR DISINFECTANTS: This type of disinfectant is furnished in phenol coefficients ranging from 2 to 24 F.D.A. Method. Perfect emulsions, guaranteed stability, trouble free in cold weather. Uniformity at all times make these disinfectants the finest produced.

PINE OIL DISINFECTANTS: These fragrant odored disinfectants are manufactured from finest quality steam distilled Pine Oil under expert chemical and bacteriological supervision. Uniform at all times, form perfect milky-white emulsions in water, impart fragrant pine scent wherever used. Offered in coefficient strengths ranging from 2 to 7 inclusive. Guaranteed and tested by the F.D.A. Method of Test.

CRESYLIC DISINFECTANTS: These disinfectants are recommended for hospital, surgical and veterinary use, meet Bureau of Standards Specifications, offered in phenol coefficients ranging from 4 to 6 F.D.A. Method of Test, form crystal clear solutions in ordinary tap water.

ALKYL PHENOL DISINFECTANTS: These newly developed disinfectants are offered with phenol coefficients ranging from 2 to 34 F.D.A. Method. Can be had in either soluble or emulsifiable types. Pine odor, lilac odor, or odorless type can be furnished.

BAC-TROL GERMICIDE: This unusual and different disinfectant is offered in coefficient 3 and 5 F.D.A. Has a distinctively different, pleasant odor enabling it to be used where other disinfectants would not be permitted. Forms milky-white emulsions in water, is stable under all conditions, uniform at all times. Obtainable in one quart and one gallon beautifully lithographed containers at extremely low prices. Available also in bulk for private brand packaging.

CREOSOTE OILS: Several grades are offered to meet specifications. For wood-preserving purposes, insecticidal uses, etc., we particularly recommend our No. 1 Refined Creosote Oil. Trouble free from sludge or separation even in sub-freezing weather. Low cost, excellent coverage and staining properties.

CRUDE CARBOLIC ACIDS: Furnished in strengths ranging from 15% tar acids to 50% tar acids. Clear, water and sludge-free oils which have been "chilled" to remove as much naphthalene as possible. Excellent as a farm insecticide.

CRESYLIC ACIDS: Of domestic and English manufacture ranging in tar acid content from 90% to 100%. Most popular grade 99/100% pale. Useful in manufacture of liquid insecticides, disinfectants, formaldehyde and other condensation products.

PES-TOX FLY SPRAY: Furnished either odorless or perfumed type. Grade A and AA by the Peet Grady Method of Test. Pleasantly scented when desired, guaranteed efficiency.

BUG-TOX INSECTICIDE: This product is particularly recommended for the killing of hard-shelled crawling insects. Contains no Pyrethrum. Furnished with jasmine, rose, or vanilla odor. Kills bedbugs, roaches, etc., quickly and surely.

INSECTICIDE CONCENTRATE No. 20: 1 gallon with 19 gallons suitable oil base results in a finished insecticide with a Grade AA rating. Pleasantly scented. Guaranteed to be stable, uniform and to form clear insecticide when diluted with proper base oil.

CRESTALL FLUID — CRESOL COMPOUND USP — CATTLE SPRAYS — WEEVIL KILLER—MOTH KILLER—TIC-TOX ARSENICAL DIP—TAR ACID OILS—LIQUID SOAPS — LIQUID AUTOMOTIVE CLEANER AND SPECIALTY PRODUCTS

WHOLESALE ONLY

Holbrook, Mass. - BAIRD & McGUIRE, INC. - St. Louis, Mo.

4: Standard Specifications for Cresylic Disinfectants

Scope

1. This standard covers materials, physical and chemical properties, and certification of quality of phenolic disinfectant (soluble type), classified under two groups as follows:

(a) Group I—Phenolic disinfectants having phenol coefficients from 1.5 to 5[1].

(b) Group II—Phenolic disinfectants having phenol coefficients above 5.

Detail Requirements (Group I)

2. Group I disinfectants shall be made from cresol or cresylic acid of coal tar or petroleum origin, and a dissolving agent.

3. Group I disinfectants shall contain not less than 50 per cent of cresol or cresylic acid, as determined by the method prescribed in U. S. Pharmacopoeia XI for the assay of cresol in the Saponated Solution of Cresol.

4. Group I disinfectants shall contain not more than 25 per cent by weight of inert ingredients (water plus glycerine, and organic solvents, if any).

5. The phenol coefficient of Group I disinfectants shall be determined by the Food and Drug Administration Method using B. typhosus as the test-organism, and shall be clearly stated on the label attached to each shipping container.

6. Group I disinfectants shall contain less than 5 per cent of benzophenol.

7. Group I disinfectants shall make clear solutions with water of zero hardness at 20° C. (68° F.) within the concentration range of from 1 to 4 per cent; such solutions, when kept in closed containers, shall remain either practically clear or become only slightly opalescent when allowed to stand for 24 hours at 20° C. (68° F.) away from direct light.

8. Group I disinfectants shall show no soap separation when cooled down to 0° C. and held at this temperature for 3 hours.

Detail Requirements (Group II)

9. Group II disinfectants shall be made from phenols of coal tar or petroleum origin, and a dissolving agent.

10. Group II disinfectants shall contain not less than 50 per cent of phenols[2].

11. Group II disinfectants shall contain not more than 25 per cent by weight of inert ingredients (water plus glycerine and organic solvents, if any).

12. The phenol coefficients of Group II disinfectants shall be determined by the Food and Drug Administration Method using B. typhosus as the test-organism, and shall be clearly stated on the label attached to each shipping container.

13. Group II disinfectants shall contain less than 5 per cent of benzophenol.

14. Group II disinfectants shall make clear solutions with water of zero hardness at 20° C. (68° F.) at concentrations of 2 per cent or less; such solutions, when kept in closed containers, shall remain either practically clear or become only slightly opalescent when allowed to stand for 24 hours at 20° C. (68° F.) away from direct light.

15. Group II disinfectants shall show no soap separation when cooled down to 0° C. and held at this temperature for 3 hours.

Certification and Labeling

16. The following form of statement on labels[3], invoices, etc., is recommended:

"The .....Company certifies this disinfectant to conform to all requirements for (Group I)
(Group II) of the standard adopted by the NATIONAL ASSOCIATION OF INSECTICIDE AND DISINFECTANT MANUFACTURERS, INC., and recorded as Commercial Standard CS71-...., by the National Bureau of Standards of the U. S. Department of Commerce.
Phenol Coefficient....."

[1] The disinfectants of Group I fall within the type commonly designated "Cresylic disinfectants."

[2] A satisfactory method of assay of all possible types of disinfectants comprised by Group II is not available, but work on the subject is in progress.

[3] When used on labels, this statement is in addition to, and not in lieu of, the ingredient statement required by the Insecticide Act of 1910.

N.A.I.D.M. DEFENSE EMERGENCY SPECIFICATION "A" FOR PHENOLIC DISINFECTANT EMULSIFYING TYPE

Purpose

1. The purpose of this defense emergency specification is to provide a minimum specification for quality, as a basis for understanding and voluntary guarantees between producers, distributors, and users in the purchase of the commodities covered by these specifications, and as a foundation for confidence on the part of purchasers that the efficacy of the material is that which may be expected of phenolic disinfectant (emulsifying type), manufactured in conformity with a recognized specification of a national trade association.

Scope

2. This specification covers materials, physical and chemical properties, and certification of quality of phenolic disinfectant (emulsifying type).

Detail Requirements

3. The disinfectant shall not contain kerosene or any petroleum distillate other than phenols of petroleum origin.

4. The phenol coefficient shall be determined by the Food and Drug Administration method, using B. typhosus as test organism, and shall be clearly stated on the label attached to each shipping container.

5. The disinfectant shall make milky emulsions with water of zero hardness at 20° C. (68° F.) when diluted in the ratio of 5 parts of disinfectant to 95 parts of water for disinfectants having phenol coefficients of 10 or under; and in the ratio of 2 parts of disinfectant to 98 parts parts of water for disinfectants having phenol coefficients of over 10. These emulsions shall show not more than a trace of oily float or sediment when stored for 5 hours at room temperature.

6. The disinfectant shall remain limpid, showing no sign of naphthalene crystallization down to 0° C. in 3 hours.

7. The disinfectant shall contain less than 5 per cent of benzophenol (phenol, C_6H_5OH).

8. The disinfectant, under normal and reasonable conditions of storage, shall remain stable and show no loss of germicidal value.

Certification and Labeling

9. The following form of statement on labels*, invoices, etc., is recommended:

The ..... Company certifies this phenolic disinfectant (emulsifying type) to conform to all requirements of a specification adopted and recorded as N.A.I.D.M. Defense Emergency Disinfectant Specification "A" by the National Association of Insecticide and Disinfectant Manufacturers, Inc.

* When used on labels, this statement is in addition to, and not in lieu of, the ingredient statement required by the Insecticide Act of 1910.

N.A.I.D.M. DEFENSE EMERGENCY SPECIFICATION "B" FOR PHENOLIC DISINFECTANT SOLUBLE TYPE

Purpose

1. The purpose of this defense emergency specification is to provide a minimum specification for quality, as a basis for understanding and voluntary guarantees between producers, distributors, and users in the purchase of the commodities covered by these specifications, and as a foundation for confidence on the part of purchasers that the efficacy of the material is that which may be expected of phenolic disinfectant (soluble type), manufactured in conformity with a recognized specification of a national trade association.

Scope

2. This specification covers materials, physical and chemical properties and certification of quality of phenolic disinfectant, soluble type.

General Requirements

3. The disinfectant shall be made from phenols of coal tar or petroleum origin and a dissolving agent.

4. The disinfectant shall not contain kerosene or any petroleum distillates other than phenols of petroleum origin.

5. The phenol coefficient shall be determined by the Food and Drug Administration method, using B. typhosus as test organism, and shall be clearly stated on the label attached to each shipping container.

6. The disinfectant shall make either a clear or opalescent mixture with dis-

Reilly
COAL TAR PRODUCTS
FOR THE SOAP
AND DISINFECTANT INDUSTRIES
CRESOLS
U. S. P., Meta Para, Ortho, and special fractions. To all specifications. In drums or tank car quantities for shipment from Indianapolis and Newark.
CRESYLIC ACIDS
The entire range—in standard grades or to buyers' specifications. In drums and tank cars from Indianapolis and Newark.
XYLENOLS
Low boiling, high boiling and symmetrical. In tank cars and drums from Indianapolis and Newark.
TAR ACID OILS
In all grades, from 10% to 75% tar acid content —or of specified phenol coefficiency, carefully blended. In 55-gallon drums and tank cars from Chicago and Newark.
NAPHTHALENE
Crude (70° C. to 78.5° C. melting point) and refined white Naphthalene melting above 79° C. In chipped, crystal, flake and powdered form.
Further information on any of these products will be furnished on request.
Reilly
COAL TAR PRODUCTS
REILLY TAR & CHEMICAL CORPORATION
MERCHANTS BANK BLDG., INDIANAPOLIS, IND.
500 FIFTH AVE., NEW YORK
2513 S. DAMEN AVE., CHICAGO
17 PLANTS To Serve The Nation

tilled water at 20° C. (68° F.) within the concentration range of 1 to 4 per cent; when opalescent, it shall become practically clear upon addition of a few drops of a 10 per cent KOH solution.

7. It shall show no soap separation when cooled down to 0° C. and held at this temperature for 3 hours.

Certification and Labeling

8. The following form of statement on labels*, invoices, etc., is recommended:

The ..... Company certifies this phenolic disinfectant (soluble type) to conform to all requirements of a specification adopted and recorded as N.A.I.D.M. Defense Emergency Disinfectant Specification "B" by the National Association of Insecticide and Disinfectant Manufacturers, Inc.

* When used on labels, this statement is in addition to, and not in lieu of, the ingredient statement required by the Insecticide Act of 1910.

N.A.I.D.M. SPECIFICATION "C" FOR PHENOLIC DISINFECTANT FROM SYNTHETIC PHENOLS

Purpose

1. The purpose of this commercial standard is to provide a minimum specification for quality, as a basis for understanding and voluntary guarantees between producers, distributors, and users in the purchase of the commodity covered by these specifications, and as a foundation for confidence on the part of purchasers that the efficacy of the material is that which may be expected of phenol disinfectant from synthetic phenols, manufactured in conformity with a recognized specification of a national trade association.

Scope

2. This specification covers materials, physical and chemical properties and certification of quality of phenolic disinfectants of synthetic origin.

Detail Requirements

3. The disinfectant shall be made from synthetic phenols of the type comprising alkyl, aryl, and aralkyl phenols, or their chlorinated or brominated derivatives, and a dissolving or emulsifying agent.

4. The phenol coefficient shall be determined by the Food and Drug Administration method, using B. typhosus as the test organism, and shall be clearly stated on the label attached to each shipping container.

5. The disinfectant, under normal and reasonable conditions of storage, shall remain stable and show no loss of germicidal value.

6. The disinfectant shall make stable emulsions or solutions with water of zero hardness at 20° C. (68° F.); they shall show not more than a trace of float or sediment when stored for 5 hours at room temperature.

Certification and Labeling

7. The following form of statement on labels*, invoices, etc., is recommended:

The ..... Company certifies this phenolic disinfectant from synthetic phenols to conform to all requirements of a specification adopted and recorded as N.A.I.D.M. Specification "C" by the National Association of Insecticide and Disinfectant Manufacturers, Inc.

* When used on labels, this statement is in addition to, and not in lieu of, the ingredient statement required by the Insecticide Act of 1910.

N.A.I.D.M. SPECIFICATION "D" FOR FORTIFIED PHENOLIC DISINFECTANT

Purpose

1. The purpose of this commercial standard is to provide a minimum specification for quality, as a basis for understanding and voluntary guarantees between producers, distributors, and users in the purchase of the commodities covered by these specifications, and as a foundation for confidence on the part of purchasers that the efficacy of the material is that which may be expected of a fortified phenolic disinfectant manufactured in conformity with a recognized specification of a national trade association.

Scope

2. This standard covers materials, physical and chemical properties, and certification of quality of fortified phenolic disinfectant of both the emulsifying and soluble types.

Detail Requirements

3. The disinfectant shall be made from phenols of coal tar or petroleum origin, plus synthetic phenols of the class comprising alkyl, aryl or aralkyl phenols or their chlorinated or brominated derivatives, and a dissolving agent.

4. The proportion of the synthetic phenol shall be not more than 25 per cent by weight of the total phenolic content.

5. The disinfectant shall not contain kerosene or any petroleum distillates other than phenols of petroleum origin.

6. The phenol coefficient shall be determined by the Food and Drug Administration method, using B. typhosus as test organism, and shall be clearly stated on the label attached to each shipping container.

7. The disinfectant, under normal and reasonable conditions of storage, shall remain stable and show no loss of germicidal value.

8. The disinfectant shall make stable emulsions or solutions with water of zero hardness at 20° C. (68° F.); they shall show not more than a trace of float or sediment when stored for 5 hours at room temperature.

Certification and Labeling

9. The following form of statement on labels*, invoices, etc., is recommended:

The ..... Company certifies this fortified phenolic disinfectant to conform to all requirements of a specification adopted and recorded as N.A.I.D.M. Disinfectant Specification "D," by the National Association of Insecticide and Disinfectant Manufacturers, Inc.

* When used on labels, this statement is in addition to, and not in lieu of, the ingredient statement required by the Insecticide Act of 1910.

SIMPLIFIED PRACTICE RECOMMENDATION FOR SIZES OF GLASS CONTAINERS AND PACKAGES FOR HOUSEHOLD INSECTICIDES

(Liquid Spray Type)

Table 1.—Retail Packages

Package Size	*Exhibition No. in Limitation Order L-103*	*Overflow Capacity*	*Maximum Weight of Glass*	*Height*	*Maximum Outside Diam. of Body*	*G.C.A. 400 Finish Size*	*Packages per Shipping Case*
Fluid Ozs.		*Fluid Ozs.*	*Avoir. Ozs.*	*Inches*	*Inches*	*M.M.*	
1 pt.	80-50	16-31/32	11	6-41/64 overall	2-63/64	28	24
1 qt.	{80-75	33-53/64	17½	8-1/8 overall	3-47/64	28}	12
	{80-76	33-59/64	17¾	8-1/8 overall	3-47/64	33}	
1 gal. {bottle	80-96	135⅝	60	12-9/16 overall	5-63/64	38}	4
1 gal. {jug	51.98	136	48	9-3/8 bottom to neck bead	6-41/64	38}	

NOTES:

1. Finishes are interchangeable in accordance with provisions of the order.

2. When lower glass weights are used, adjustment to make correct capacity shall be made in the "B" dimension.

3. Profiles similar to those illustrated for Exhibit Series 80-00 for Boston Round Bottles and Series 51-00 for Glass Jugs as shown in WPB Limitation Order L-103 shall be maintained consistent with "C" and "D" dimensions.

4. Containers shall be round.

5. Bottom stippling optional.

Floor Wax Specification

Official Specification and Standard Test Method of The National Assn. of Insecticide and Disinfectant Mfgrs.

A SPECIFICATION and standard method of testing for water emulsion floor waxes was adopted by the National Association of Insecticide & Disinfectant Manufacturers at a meeting in Cleveland, June, 1943. Specification and method follows:

SPECIFICATION FOR WATER-DISPERSION FLOOR WAX

Applicable to Waxes of from 10 to 15% Total Solids

A. General Requirements

1. The material shall be suitable for application to all sealed floors and floor coverings in general.

2. The material shall be a stable aqueous colloidal dispersion of waxes and other suitable substances. The composition and properties of the material shall be such that it will meet all of the provisions of the detailed requirements, when tested by the NAIDM test methods.

3. When applied in accordance with the manufacturer's direction, the material shall dry to a lustrous finish without polishing.

B. Detailed Requirements

1. *Sediment.* The material shall be a fluid dispersion containing not over 4 per cent sediment, the percentage being calculated on the basis of total solids.

2. *Stability.* The material shall show no gelling or creaming when kept in closed containers at 52° C. (125° F.) for 168 hours (7 days).

3. *Application.* The material is to be applied as a thin, uniform film to clean dry flooring surfaces.

4. *Color and Transparency.* A thin, dried film of the material, prepared by flowing onto a clear glass plate and drying in air at 25° C. (77° F.), shall be substantially transparent and practically colorless, as viewed by transmitted bright daylight.

5. *Leveling and Spreading.* The material, when applied as a thin, uniform film on new linoleum shall dry without streaking.

6. *Lustre or Gloss.* The dried film shall increase the gloss of new linoleum not less than 10 per cent, as measured by a light reflectance meter.

7. *Alkalinity.* The material shall not have a pH greater than 10.0 nor less than 4.0.

8. *Surface Tension.* The material shall have a surface tension not greater than 33 dynes per centimeter at 25° C. (77° F.).

9. *Flexibility of Film.* The dried film shall be sufficiently flexible so that no cracking will occur when a 2 coat application, on new linoleum, dried 48 hours at 25° C. (77° F.) and 50 per cent relative humidity is bent, through 180° around a 2 inch diameter mandrel.

10. *Abrasion Resistance.* The dried film shall have an abrasion index (Taber cycles divided by weight of film in mgs. per sq. cm.) of not less than 100 when tested on glass plates using a Taber Abraser (Model J or equivalent) with Taber CS-10 Calibrase wheels.

11. *Tackiness and Slipperiness.* The dried film shall be neither soft and sticky nor excessively slippery.

12. *Water Resistance.* The dried film on a specified surface, after 48 hours at 25° C. (77° F.) and 50 per cent relative humidity shall be resistant to cold water. The film shall not be permanently whitened or damaged by contact with water for one hour at 25° C. (77° F.). The film shall not be removed by damp mopping with a soft rag using clear water at 25° C. (77° F.).

13. *Removal of Film.* A film dried for 48 hours at 25° C. (77° F.) and 50 per cent relative humidity, on new linoleum, shall be easily removable by moderate scrubbing with a soft bristle brush, using an aqueous detergent solution, containing 0.25 per cent tallow soap chips and 0.25 per cent aqua ammonia (28 per cent NH^3) at a temperature of 50° C. (122° F.).

N.A.I.D.M. PROPOSED STANDARD METHODS FOR TESTING WATER-DISPERSION FLOOR WAX

Purpose

The purpose of compiling a more or less complete set of methods for testing water-dispersion floor wax is to make available to the manufacturer, user or other interested persons suitable procedures which have proven to be best adapted for the purpose intended. It is the further purpose to limit the methods more or less to tests designed to evaluate performance properties rather than to determine composition data. There is a need for such standard methods because even on such a simple test as total solid content, there is a possibility of widely divergent results unless great attention is paid to small details. At present there are no methods accepted as standard by any association or group except as such methods may be part of a specification. Standard methods of testing will make it possible to eliminate controversies which are now inevitable.

Methods of Testing

1. *Sediment.* Mix the original sample well and pour a 100 cc. portion into a graduated A.S.T.M. water and sediment tube. Centrifuge for 15 minutes at approximately 2,000 r.p.m. Read directly volume of sediment in mls.

2. *Stability.* Measure viscosity of original sample at 25° C. (77° F.) using Oswald type pipet viscosimeter. Pour 100 ml. of the original sample into a 4 oz. bottle approximately 35 mm. inside diameter. Close the bottle securely with a clean cork and allow it to stand undisturbed in an upright position at 52° C. (125° F.) for 168 hours. At the end of this time, cool to room temperature, measure viscosity as before and observe for any creaming, separation or gelling.

3. *Total Solids.* Use a porcelain capsule crucible approximately 5 cm. in diameter and 1 cm. deep for the determination. Heat the capsule to dull red heat, cool in a desiccator, and weigh to the nearest tenth of a milligram. Place in the capsule a sample of from 2 to 3 grams accurately weighed to the nearest milligram, taking suitable precautions to avoid error due to loss of weight by evaporation during transfer and weighing of the sample. Heat the capsule containing the sample on a steam bath for 1 hour, then transfer it to a drying oven and heat for 3 hours at 105° to 110° C. (221° to 230° F.). Cool the capsule in a desiccator and weigh to the nearest tenth of a milligram. Multiply the weight of non-volatile matter by 100 and divide by the weight of the sample to obtain the percentage of non-volatile matter.

4. *pH Value.* Determine the pH of the sample at 25° C. (77° F.) using a glass electrode pH meter without application of correction for sodium or potassium ion concentration.

5. *Surface Tension.* The surface tension of the sample at 25° C. (77° F.) may be determined by one of the reliable, established methods for this determination. The ring detachment method is preferred for this test on water-dispersion waxes. Instruments suitable for determination of the surface tension of water-dispersion floor waxes include the Cenco-du Nouy Tensiometers described in Bulletin 101 of the Central Scientific Company.

6. *Levelling and Spreading.* Test panels, 3 x 6 inches, of new brown linoleum of good quality and either ⅛ or ¼ inch in thickness shall be used. Before applying the water-dispersion wax to these test panels, thoroughly re-

move any wax coating. Usually this can be done by soaking for five minutes at 50° C. (122° F.) in an aqueous solution containing 0.25 per cent by weight of 88-92 per cent tallow chip soap and 0.25 per cent by weight of 28 per cent aqua ammonia, scrubbing the top surface of the test panels gently with a soft bristle brush or cloth saturated with the above detergent solution at 40°-50° C. (104°-122° F.), rinsing the test panels thoroughly with water at 40°-50° C., draining and wiping the top surface dry with soft clean cloths.

Apply some of the sample to one of the cleaned linoleum test panels, using a small, clean mohair applicator just saturated with the sample, and applying it with light, uniform, overlapping parallel strokes. Note levelling and spreading properties from appearance of dried film.

Place coated linoleum specimen in desiccator or chamber in which humidity is controlled at 50 per cent relative humidity (see Note 1) at a temperature of 25° C. (77° F.) for 48 hours. Then apply a second coat of sample using same technic as above. Note any re-emulsification on applying second coat and levelling and spreading properties from appearance of dried film.

If flexibility of film is required, test can be carried out on same test panel.

7. *Drying Time.* Flow a uniform film of the sample over the surface of a clear glass plate which has been cleaned by immersion in chromic acid cleaning solution followed by thorough rinsing with clear water. Incline the test plate at an angle of 45° to the horizontal and allow it to drain and dry in this position in air maintained at a temperature of 25° C. (77° F.) and 50 per cent relative humidity. Observe time required for film to become dry to touch at a point 15 mm. above lower horizontal edge. Express drying time as period required to nearest minute. If transparency of film is required, observation can be made on this same test panel.

8. *Gloss or Lustre.* Use a gloss meter consisting of a light source, of constant intensity, directing a substantially parallel beam at the surface to be tested at an angle of incidence of 45°; a photocell, with a spectral-response curve approximating the ICI standard luminosity curve, placed to intercept the reflected beam at an angle of reflection of -45°; a sensitive galvanometer for measuring the e.m.f. generated by the photocell. A meter of this description is supplied by Pfaltz & Bauer, Inc., New York City. Calibrate the gloss meter by placing it on an optical flat, made of glass with an index of refraction of nD = 1.5172, 8 mm. thick, with a fine ground back resting on a non-reflecting black surface. Check the instrument before and after all readings on test panels.

Select a test panel of new brown linoleum from which all wax has been thoroughly removed and record the gloss of the test panel. Flow a uniform film of the sample onto this test panel, drain and dry at an angle of 45° in air at a temperature of 25° C. (77° F.) and 50 per cent relative humidity for a period of 24 hours, then measure the gloss of the dried film on the test panel with the calibrated gloss meter. Subtract the gloss reading of the test panel from the gloss reading of the dried film on the test panel, multiply the difference by 100, and divide by gloss reading of the test panel to give the percentage increase in gloss.

As an alternative method particularly intended for control testing, it is proposed that a standard test solution consisting of ammonia-water-shellac or sugar in water be developed so that such solution when applied to a linoleum surface will produce a gloss equivalent to an increase of 100 per cent as determined by the gloss meter.

9. *Transparency of Film.* Clean a piece of clear plate glass using chromic acid cleaning solution and rinse thoroughly. Flow a uniform film of the sample onto one surface of this glass, and allow it to drain and dry at an angle of 45° in air at a temperature of 25° C. (77° F.) and 50 per cent relative humidity. Observe the dried film from the under side of the glass plate by transmitted bright daylight.

10. *Flexibility of Film.* Prepare linoleum test panel with 2 coats of sample exactly as described under Leveling and Spreading. Alternately the same test panel may be used for both tests. Determine the flexibility of the film at 25° C. (77° F.) and 50 per cent relative humidity by bending the test panel, with the treated surface on the outside, around a mandrel 2 inches in diameter, through an arc of 180°. Observe the film for any cracking or chipping.

11. *Abrasion Resistance.* Prepare three discs of ⅛" thick, clear plate glass, each 4" in diameter with a ¼" diameter hole in the center. Clean the discs by the method specified for linoleum test panels. By means of two glass cylinders, one 2" in diameter and one 3⅞" in diameter, with lower ends ground exactly at right angles to their axes, and dipped into melted paraffin, apply two rings of paraffin to the upper surface of each disc, concentric with the center hole, being careful to avoid contaminating the cleaned glass surface between the two rings. Determine the area of the glass surface between the two paraffin rings in sq. cm. by actual measurement with an accuracy of ± 2 per cent. Mark each glass disc for identification, and weigh each accurately in air at 25° C. (77° F.) and 50 per cent relative humidity. Coat the surface between the two paraffin rings on each disc with a thin uniform film of the original sample by applying between 0.5 and 1.0 ml. of the original sample of water-dispersion wax from a 1 ml. pipette and spreading it uniformly over the entire surface between the paraffin rings with the tip of the pipette. Dry the coated discs in a horizontal position in air at 25° C. (77° F.) and 50 per cent relative humidity for 24 hours, and weigh the discs again accurately under these conditions. Subtract the original weight and divide the difference in milligrams by the area of the wax film in sq. cm. to give the weight of coating in mg. per sq. cm. Abrade the coating on each disc, at 25° C. (77° F.) and 50 per cent relative humidity, on a Taber Abraser, Model J, using Taber CS-10 Calibrase wheels, until the coating has been worn away from approximately 50 per cent of the area of the abrasion track. Clean the wheels by ten cycles on the carborundum paper cleaning discs after each 100 cycles on the wax surface. Subtract the total number of cleaning cycles from the total number of cleaning and abrading cycles. Divide the number of abrasion cycles required for each disc by the weight of the dried coating in mg. per sq. cm. on that disc to give the wear resistance index.

12. *Tackiness and Slipperiness.* No satisfactory method has yet been developed.

13. *Water Resistance.* Prepare a test panel on cleaned new linoleum in the manner described under Levelling and Spreading. Place a large drop of distilled water, 1 to 2 cm. in diameter on the treated surface of the test panel. Allow to stand undisturbed for one hour in air at 25° C. (77° F.) and 50 per cent relative humidity. Shake off any remaining water. Observe whether the wax film is damaged or appreciably whitened by the water. Note whether any visible spotting of the film disappears on drying for ½ hour at 25° C. (77° F.) and 50 per cent relative humidity.

14. *Resistance to Damp Mopping.* Wet a clean soft cloth with clear water at 25° C. (77° F.). Wipe the entire treated surface of the test panel used in the Water Resistance test with this wet cloth, exerting moderate pressure and wiping five times at intervals of 2 seconds. Then wipe the test panel dry with a clean, soft, dry cloth. Observe whether the wax film is removed by this process.

15. *Removability.* Prepare a test panel on cleaned new linoleum in the same manner described under Leveling and Spreading. After aging panel for 48 hours, immerse it in detergent solution same as specified under Levelling and Spreading, for 5 minutes at a temperature of 50° C. (122° F.). Then, with a test panel still immersed, scrub its treated surface moderately with a soft bristle brush, making at least 10 strokes of the brush with moderate hand pressure across each portion of the treated surface. Remove the test panel from the detergent solution, rinse it thoroughly with clear water at 40°-50° C. (104°-122° F.), and wipe dry with a soft, clean cloth. Observe the panel for completeness of removal of wax film after drying.

Note 1. A saturated solution of calcium nitrate ($Ca(NO^3)^2.4H^2O$) at 25° C. (77° F.) gives 50 per cent relative humidity.

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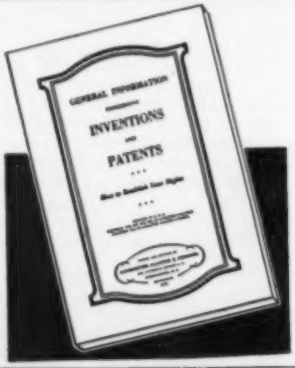

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Peet-Grady Method

Official Method of the National Assn. Insecticide & Disinfectant Mfrs. for Evaluating Liquid Household Insecticides.

THE Peet-Grady Method was adopted as an official test in 1932, and has since been improved in minor details, all improvements having been officially accepted after satisfactory trials. Two methods, or procedures, are now permitted under the official test. The Small Group is substantially the same as outlined at the time the test was adopted in 1932. The Large Group, or later procedure, was officially adopted in 1938. Both methods are being used extensively, and if correctly performed evaluations by either test may be expected to be in reasonable agreement. The two methods are designed to evaluate liquid sprays in conjunction with the Official Test Insecticide as the basis for comparison.

I. SCOPE

This method of test is a means of determining the relative efficiency of contact liquid insecticides used in the form of a spray. As a biological test, it is subject to variations which accompany the reaction of living organisms and should be employed under the supervision of a person familiar with the biological testing of insecticides. In order to measure with reasonable tolerances the relative position of different insecticides, the test is designed to be used in conjunction with the "Official Test Insecticide" as the basis of comparison. In the small group or original procedure the insecticides are tested against lots of 100 - fly test units having natural sex ratios, prepared while the flies are in either the pupal or adult stage. Ten paired tests of known and unknown samples are required to compensate for biological variables. In the large group procedure the insecticides are tested against representative 500-fly test units having uniform sex ratios, prepared while the flies are in the pupal stage, placing at least 500 pupae in each cage.

II. APPARATUS

A. Rearing Room

This room may be of any convenient size constructed so as to be free from strong drafts, and maintained at a temperature between 80 and 85 degrees Fahrenheit with a range in relative humidity between 40 and 70 per cent. It should be separate from the testing room in order to eliminate the possibility of traces of insecticide coming in contact with the test insects prior to the test.

B. Testing Room

This room may be of any convenient size capable of holding the standard Peet-Grady Test Chamber and permitting adequate additional space for the operator to handle the test efficiently. While conducting tests this room shall be maintained at a temperature of 75 to 85 degrees Fahrenheit. It is not necessary to control the humidity, although it is suggested that it be held between 40 to 70 per cent relative humidity. Since the exhaust fan of the Chamber will remove relatively large quantities of air, the air inlet to this room should be constructed to permit air of approximately the specified temperature to enter the room.

C. Peet-Grady Test Chamber

The Test Chamber shall be constructed of wood or metal, or other suitable material. The inner surface shall be smooth and impervious to the usual household type of insecticide. The Chamber must be rigidly constructed and the inside must be free from cracks, projections, ledges, etc. The Chamber shall be a 6-ft. cube by internal measurements, with a tolerance of plus or minus 1 in. for any dimension. One wall shall contain a tight-fitting door large enough for a man to enter conveniently, with the interior side flush with the wall when closed. One or more of the walls, or the ceiling, shall contain an observation window. (It is suggested that at least two opposite walls have observation windows.) Illumination is provided by means of a glass window in the ceiling above which is placed an electric lamp in a reflector, or by any other satisfactory means such as fluorescent lights. A wire screen-covered air duct (10-mesh screening) shall be provided to permit the ventilation of the chamber after each test. The location of this exhaust duct in relation to ventilation openings in the walls must be such that thorough ventilation of the chamber is obtained. Preferably, this is accomplished by ports approximately 6 x 6 in. in size, covered with screen on the inside and provided with tight-fitting hinged covers on the outside. Four ports located in the 4 lower corners, or 8 ports located in both the 4 upper and 4 lower corners are satisfactory. The ventilation ports should not be on the same level as the exhaust port. The entrance door may be used alone or in conjunction with the ventilation ports if a screen door is provided and thorough ventilation of the chamber is obtained. Satisfactory openings shall be provided for the introduction of the insecticide; these shall be so constructed and so located that uniform distribution of the spray is effected. These openings may be round 1 in. holes located not less than 6 in. or

more than 18 in. from the ceiling and 1 in. from the nearest corner on each wall or a single hole may be provided in the center of the wall 6 to 18" from ceiling. Any spraying arrangement that may be used should not furnish hiding places for the insects nor allow undue ventilation. The nozzle of the atomizer shall be oscillated slowly in a horizontal plane to avoid spraying walls and ceilings and to effect uniform distribution of the spray.

D. Fly Cages

Any satisfactory cages of any convenient type may be used. It is suggested that the base be square in shape to provide sufficient floor space, and that they provide at least 1 cubic inch of space per fly. The floor of the cage is preferably detachable, to facilitate cleaning the cages and inserting a paper floor covering. The cages are constructed of wood or other suitable material and 16 mesh wire screening, and are fitted with a sleeve opening or rubber membrane. At least 2 sides and the top shall be screened.

E. Atomizer

The atomizer used shall be the special one constructed by the DeVilbiss Company for the N.A.I.D.M. Standardization Committee and obtainable from that company, by referring to "special atomizer for Peet-Grady Insecticide Test—DeVilbiss Special No. 5004." The sprayer shall be operated with air maintained at a constant pressure of 12.5 plus or minus 0.5 lb. per sq. in. and which must be free of oil, dust particles, or condensed moisture. The atomizer should deliver 12 cc of base oil in 24 seconds (tolerance ± 1 second) and this should be checked frequently.

F. Apparatus for Picking Up Flies

Any convenient means of picking up the paralyzed flies without injuring or appreciably disturbing them may be used. A vacuum device providing gentle suction and a sufficiently large receptacle to prevent crowding of the flies has been found satisfactory. The pick-up device shall be cleaned after each test with the same solvent used in cleaning the chamber. However, careful picking up by hand or other satisfactory methods are permissible.

G. Exhaust Fan

An exhaust fan moving not less than 1,000 cu. ft. of air per min. is used to ventilate the chamber after each test. It shall be arranged with adequate piping to exhaust the chamber vapors outside of the building.

H. Test Insect

For evaluation purposes, the house fly (Musca domestica, L.) is used. Healthy test groups having an average age of not less than 4 nor more than 6 days are to be used. Individual flies in the test groups shall not be less than 3 nor more than 7 days old at the time of the testing. Under the usual rearing conditions (temp. 80-85 F.) the flies are ready for use 15 days after the culture was prepared (5 days after peak emergence) or about the second day of oviposition. The strain shall be of such susceptibility that the O.T.I. will cause a mortality of from 30 to 55 per cent.

I. Reference Insecticide

The primary reference insecticide used in this test for evaluating the unknown shall be the current Official Test Insecticide (O.T.I.) and shall be prepared by the National Association of Insecticide and Disinfectant Manufacturers, Inc., each year.

J. Insecticide Paper

Any unsized, non-glazed absorbent paper such as brown kraft wrapping paper or gray bogus paper of proper width may be used on the chamber floor. The paper surface should be renewed for each test. Two overlapping sheets of 36-40 in. width or one sheet of 6 ft. width may be employed. No special weight is to be specified although 60-80 lbs. weight paper has been found excellent.

III. PROCEDURE

A. Raising and Handling of Flies

Culture jars are prepared by filling cylindrical battery jars or other satisfactory containers measuring approximately 6 in. in diameter by 9 in. high, three-quarters full of the synthetic medium prepared as follows:

For 1 jar:

400 g. soft wheat bran (coarse)

200 g. alfalfa meal.

Mix together thoroughly, place in jars, and then add 900 to 1,000 CC of an aqueous liquid suspension containing:

16 ml. malt extract

10 g. compressed yeast

Mix the suspension throughout the bran-alfalfa to give a loose mixture. The proportion of liquid ingredients to dry ingredients may be varied slightly to prevent mold growth. Dry ingredients and suspension may be mixed before adding it to the battery jar.

Horse manure with added water, malt, and yeast may also be used as the rearing medium. The manure, which must be fresh, is preferably pasteurized for 2 hrs. at 160-165° F. After the manure is cooled, it is packed loosely into battery jars, leaving just enough room on top to fit the covers. To each jar is added 100 CCs of yeast cells suspended in water taken from the formula of 1 # yeast to 1,700 CCs water. The volume of suspension added may vary, dependent on the moisture content of the manure, but should be such as to maintain a slight excess of liquid in the bottom of the jar with a thin dry layer of medium on the top at the time of pupation. Other satisfactory breeding media may also be employed such as powdered milk, mixtures of alfalfa meal, bran and brewers' grains or oat hulls, etc.

Eggs are deposited in the food dishes or other containers suitable for oviposition, in cages containing 4 and 5-day-old flies. It is preferred that eggs be collected from at least two cultures. About 2,000 eggs or sufficient to give 1,500 to 1,800 flies per jar are transferred from the moist cotton to the jar after the medium has been mixed. The number of eggs to use may be determined by gently shaking the eggs in water for a minute, allowing them to settle out and then estimating volumetrically from a calibrated tube. One-tenth ml. of settled eggs contains about 500 eggs.

When the larvae have migrated to the top inch of media and pupated, usually on the eighth or ninth day after preparation, the pupae are separated from the medium by lifting off the top ½ in. of the medium in each jar, loosening the exposed pupae, and

then pouring the pupae with adhering particles of medium on a cafeteria tray. The pupae-medium mixture is placed in a fan blast until it is of such dryness that the fan blast will effect a clean separation of the pupae and medium when the mixture is sprinkled over an inclined tray placed in the air stream. Other procedures such as the use of funnels may be employed for separating the pupae from the medium. The pupae must be handled gently to avoid injury.

The separated pupae are thoroughly mixed and weighed into groups as test units and each group is placed in a shallow dish which is, in turn, placed in a cage. If the large group procedure is used the test unit consists of approximately 500 pupae. If the small group procedure is used, 1,200 to 1,500 pupae are placed in stock cages of 1,500 cu. in. or larger size. The series of test units is then kept for 5 days after peak emergence or until the second day of oviposition (usually the 15th day after the culture was prepared). Each cage is supplied with a dish containing a 50 per cent dilution of milk with water (or other satisfactory food), so prepared as to prevent the flies from drowning. A 40% formalin solution at the rate of 1/1500 delays souring of milk for several hours. Satisfactory food must be available to the flies at all times.

B. Test Procedure

On the second day of oviposition the series of cages from one culture are ready for testing. In the large group procedure all flies in one cage are transferred to the thoroughly cleaned Peet-Grady chamber, the floor of which is covered with a satisfactory type of paper. In the small group method approximately 100 flies are used in each test. Samples may be taken by liberating 100 flies directly into the chamber and continuing until about 10% of flies remain in the stock cage. These should be discarded. The order of spray treatments must be randomized as discussed in paragraph 4, # 5. Samples may be taken also by discarding the first 100 flies and then counting 50 flies into each of 9 small cages. 100 flies are counted into the 10th cage and then, starting with the 9th small cage and working backwards, 50 flies are added to each. Flies remaining in the stock cage are discarded. The cages for each test are picked at random and the number of flies should be within 5 of 100.

All ports and entrances are closed, the windows are equally shaded, and a total of 12 ml. of insecticide is applied at 12.5 lb. pressure in approximately equal quantities through each spray hole, care being taken to assure that the insecticide is uniformly distributed throughout the chamber. The chamber is kept closed at a constant temperature in the range of 80-85° F. for 10 min. from the time the spraying is started. At the end of 10 min. the ports are opened and the chamber is ventilated while the flies are being picked up.

The paralyzed flies are picked up and transferred immediately to clean cages meeting the specifications of paragraph II D. These flies may be counted when they are picked up or later, depending upon which time is the most convenient.

During the subsequent 24-hr. recovery period, the cage is placed in the rearing room and supplied with a gauze-wrapped ball of cotton saturated with 10 per cent sugar solution or suitable food made available by other satisfactory means provided it is near the floor of the cage and flies cannot drown in it.

The few unparalyzed flies in the chamber at the end of the 10-min. exposure period are counted and removed.

Before a new cage of flies is liberated for the next test, the chamber walls are cleaned or wiped with a clean cloth saturated with alcohol containing 10 per cent acetone, or with other satisfactory solvents. It is recommended that the chamber be periodically cleaned with soap and water, to make sure that all toxic residues are completely removed. Special precaution should be taken to clean the inside walls of the chamber with the proper solvent after a test with a new chemical compound so as to eliminate the possibility of a toxic residue.

C. Assembling the Data

The number of unparalyzed flies must be counted and recorded at the end of the 10 min. exposure period. The dead flies are counted 24 hrs (± 1 hr.) later, preferably by removing them from the recovery cage. Only flies that show no sign of life upon being touched may be counted as dead. If paralyzed flies were counted as they were collected, the sum of paralyzed and unparalyzed flies yields the total flies in the test. If paralyzed flies were not counted as collected, the recovered flies are killed by placing the cage in an oven at 170° F. for a few minutes, after which they are counted. The sum of recovered and dead flies yields the paralyzed flies and this sum added to the unparalyzed flies yields the total flies used in the test. The mortality is the per cent dead of total flies and the knockdown is the percent paralyzed of total flies.

IV. CONDITIONS FOR OFFICIAL EVALUATION

1. The tests shall be conducted in accordance with the procedure previously described.

2. An unknown insecticide to be officially rated shall have a knockdown percentage not lower than that of the O.T.I. with a tolerance of minus 2.

3. Cages showing a natural mortality greater than 5 per cent on the day scheduled for testing shall not be used.

4. Evaluation of an unknown shall be based on the difference of the average mortalities obtained with the O.T.I. and the unknown sample. The O.T.I. kill shall fall between 30 and 55 per cent. Denote the difference between kills by the appropriate grade according to letter: U. S. Dept of Com. CS-72-38

Grade AA	—excellent	+ 16 or higher
Grade A	—good	+ 6 to + 15
Grade B	—equal to O.T.I.	− 5 to + 5

5. In the small group procedure no more than 2 unknowns may be tested, in conjunction with one O.T.I. in any one series. Ten tests are run on the O.T.I. and on each of the unknowns in parallel; that is, test each sample of the series the same number

of times with flies of the same batch and test every member of the series the same number of times on any one day. The three samples of a series are to be randomized in order of testing until 30 tests have been run. When only one unknown and the O.T.I. comprise the series, the order should likewise be randomized. For example, 1, 2; 2, 1; 2, 1; 1, 2; etc. until twenty tests have been completed. The standard error of the mean difference between the average O.T.I. kill and the average unknown kill must be less than 3. (See example under paragraph 4.) If it is 3 or greater, the differences between pairs were too variable and to make the results valid additional paired tests must be run to bring the standard error of the mean difference down to 3 or lower. Calculate the mean difference between kill obtained with the unknown and that obtained with the O.T.I.

The following example illustrates the arrangement of tests and calculations described in the preceding paragraphs. When two unknowns and the O.T.I. are tested in series, the first table should consist of differences between No. 1 and the O.T.I., the second table should show differences between unknown No. 2 and the O.T.I. The method of calculation is shown in the following sample:

Pair	*Date*	*Batch*	*Unknown No. 1 % Kill*	*O.T.I. % Kill*	*Difference*	*Deviation from Difference*	*Deviation Squared*
1	12/8	12/3	58	49	+9	+2	4
2	12/8	12/3	62	50	+12	+5	25
3	12/8	12/3	50	47	+3	—4	16
4	12/9	12/4	52	46	+6	—1	1
5	12/9	12/4	60	52	+8	+1	1
6	12/9	12/4	65	50	+15	+8	64
7	12/10	12/5	54	48	+6	—1	1
8	12/10	12/5	56	57	—1	—8	64
9	12/10	12/5	51	44	+7	+0	0
10	12/10	12/5	57	52	+5	—2	4
			56.5 M	49.5 M	7.0MD	0	180 sum d^2

Mean difference equals 7.0; Standard error of MD =

$$\sqrt{\frac{\text{Sum } d^2 =}{n-1}} \quad \sqrt{\frac{180}{9}} = 1.42$$

$$\frac{}{\sqrt{n}} \qquad 3.16$$

1.42 is less than 3, thus indicating the test has been properly conducted.

The letter n (in formula above) denotes the number of paired tests. This number is always 10 except when it is necessary to run additional tests to bring the standard error of the mean difference down to 3 or less.

The unknown in the example above tests 7 points (units of difference between the percentage kill of O.T.I. and the percentage kill of the unknown) better than the O.T.I.; therefore, unknown No. I is an "A" grade insecticide.

6. In the large group procedure the evaluation is carried out as follows:

The evaluation is based on the difference in mortality of the O.T.I. and the unknown as determined by one comparison on each of three cultures. Each culture used in determining the evaluation must show an O.T.I. kill falling between 30 and 55 per cent. Replicated O.T.I. tests on one culture shall agree within 10 points.

The following example illustrates the order of testing and the computation of the evaluation:—

The order of testing shall be random, except the O.T.I. shall be replicated within each culture with the random order restricted to the first two and the last two tests in any series.

Culture	*E*		*F*		*G*	
Date	11/21		11/22		11/23	
Cage No.	*Sample*	*% Dead*	*Sample*	*% Dead*	*Sample*	*% Dead*
1	O.T.I.	36	Unknown B	55	O.T.I.	40
2	Unknown A	42	O.T.I.	46	Unknown F	54
3	Unknown C	32	Unknown C	32	Unknown E	58
4	Unknown B	50	Unknown F	55	Unknown A	46
5	Unknown E	65	Unknown A	46	Unknown C	30
6	Unknown D	55	Unknown D	60	Unknown D	58
7	Unknown F	48	Unknown E	70	O.T.I.	38
8	O.T.I.	36	O.T.I.	44	Unknown B	55

	Culture Mortalities	*Average*	*Rating*	*Grade*
O.T.I.	36; 45; 39	40		
Unknown A	42; 46; 46	44.7	+ 4.7	B
Unknown B	50; 55; 55	53.3	+13.3	A
Unknown C	32; 32; 30	31.3	— 8.7	Below B
Unknown D	55; 60; 58	57.7	+17.7	AA
Unknown E	65; 70; 58	64.3	+24.3	AA
Unknown F	48; 55; 54	52.3	+12.3	A

Disinfectant Testing—F. D. A. Method

Official Method of U. S. Food & Drug Administration, U. S. Department of Agriculture, and National Assn. of Insecticide and Disinfectant Manufacturers for Determination of Phenol Coefficients of Disinfectants

By G. L. A. RUEHLE and C. M. BREWER
U. S. Food and Drug Administration

ALL antiseptics and disinfectants shipped or offered for shipment in interstate commerce or offered for import into or export from the United States are subject to the provisions of the Federal insecticide act, the Federal food and drugs act, or both. In the enforcement of these acts it is necessary to determine the accuracy of the bactericidal and antiseptic claims made for such products. A number of methods have been developed for determining bactericidal effectiveness, but all of them possess certain disadvantages. Of course it is impossible to devise tests which will apply in all cases, but during the past 20 years the Insecticide and Fungicide Board and the Food and Drug Administration have found certain methods to be particularly well adapted to their purposes.

Confusion has arisen from the fact that, in many cases, manufacturers have not used the same methods of testing their products, as a basis for preparing their labels, as those used by the administration. This possibility of misunderstanding would be obviated if the same methods were employed by all, and many manufacturers, recognizing this, have requested information as to the methods employed by the Food and Drug Administration. In view of this, it seemed desirable to publish them in a form which would make them generally available.

This circular, therefore, describes briefly the methods usually employed in the insecticide control laboratory for testing official samples of antiseptics and disinfectants. No attempt is made to review the literature of disinfectant testing in detail, but the most important papers relating to the methods here presented are cited.

Determination of Phenol Coefficient[1]

There are in general use at the present time three methods of determining the phenol coefficient; the Hygenic Laboratory (H. L.) method (11)[2], that of Rideal-Walker (R-W) (7), and the method developed by this laboratory. It has been realized for a long time, especially among qualified workers in the field of phenol coefficient testing, that there were numerous handicaps and minor deficiencies to be encountered in the routine manipulation of both the H. L. and R-W methods. Lloyd P. Shippen, formerly bacteriologist of the Insecticide and Fungicide Board, after much experience in the testing of disinfectants, devised a method for obtaining phenol coefficients, utilizing as its basis the best features of the two older tests. Under pressure of a great volume of routine work this method was first put into practice more than 15 years ago and found to be so satisfactory that it has come to be used for testing the great majority of the germicides now received at the Food and Drug Administration.

George F. Reddish, successor to Doctor Shippen, later published this method under the name, "The R-W modified method" (5).

The procedure of Shippen has been little changed, but the standards for the resistance of the test organisms, *Eberthella typhi* (Schröter) Buchanan,[3] and *Staphylococcus aureus* Rosenbach, have been firmly established and provisions for the use of other organisms have been added. The method, as here published, is designated the "Food and Drug Administration phenol coefficient method" or briefly, the "F. D. A. method."

The differences in the three methods are shown in Table I. (See Next Page).

There need be very little confusion arising from substituting the F. D. A. method as a test for products previously tested by either the R-W or the H. L. methods. The phenol coefficients of the large number of substances chemically related to phenol (the only type of disinfectants for which the H. L. method is accepted) (11) are, in most cases, practically the same, whether tested by the F. D. A. or the H. L. method. Not only has continued use of the method in this laboratory shown this to be true (2), but collaborative experiments in five other laboratories (unpublished) confirm this fact. In comparing this method with the R-W method, similar results in general are obtained, although a somewhat lower coefficient usually results with coal-tar products having high coefficients. However, the higher results sometimes obtained by the R-W method may be misleading. R-W broth is not well adapted for the optimum growth of the test organism; hence negative subcultures frequently indicate that the organism has been killed, when in fact it may have been only rendered incapable of growing in this culture medium.

The curtailment in labor, time, and material through the use of the F. D. A. method renders it particularly valuable where a large number of samples are involved. The F. D. A. method is considerably superior to the R-W method in producing consistent results (4, 12). The medium employed is better adapted to bacterial growth, and the technic is not restricted to the use of one test organism (*Eberthella typhi*) as is the case of the R-W and H. L. methods. Moreover, the stock cultures of *E. typhi* and *Staphylococcus aureus*, the organisms principally used in germicidal testing, remain sufficiently constant in their resistance to phenol, when grown to an adjusted medium, to necessitate but one phenol control,

[1] For the benefit of those unfamiliar with testing disinfectants a brief statement of the principles of determining phenol coefficients is made. The phenol coefficient is a figure expressing the ratio of the killing efficiency of a disinfectant as compared with that of phenol tested under identical conditions. The sample to be tested is diluted and the dilutions arranged in a series of decreasing concentrations (increasing dilutions). To these a specified amount of the test organism in broth culture is added. At the end of fixed periods of time a small portion of the mixture of diluted disinfectant and test organism is transferred to a nutrient culture medium and incubated. No growth in the subculture indicates that the organism has been killed. The greatest dilution (weakest concentration) of the disinfectant killing in a definite time period is divided by the greatest dilution of phenol killing in the same time period. This ratio is the phenol coefficient. It should be noted that the phenol coefficient is not based on a comparison of different time intervals but on a comparison of different concentrations acting for specified time periods.

[2] Numbers in parentheses refer to Literature Cited. Page 196.

[3] Throughout this paper the term *Eberthella typhi* is used for *Bacillus typhosus*, in accordance with the nomenclature adopted by the committee on classification of the Society of American Bacteriologists (1).

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TABLE 1.—*Differences in media and manipulation of the three methods of determining phenol coefficient.*

Item	F. D. A. method	R-W method	H. L. method
Composition of medium.....	Peptone[1], 10 gm..... Liebig's beef extract, 5 gm.... Salt, 5 gm..... Water, 1,000 c. c..... Boil 20 minutes.....	Peptone[2], 20 gm..... Liebig's beef extract, 10 gm... Salt, 10 gm..... Water, 1,000 c. c..... Boil 30 minutes.....	Peptone[1], 10 gm. Liebig's beef extract, 3 gm. Salt, 5 gm. Water, 1,000 c. c. Boil 15 minutes.
Acidity of medium.....	pH 6.8	+1.5 No definite pH.....	Unadjusted but pH between 6.0 and 7.0.
Amount of culture medium in tube.	10 c. c.....	5 c. c.....	10 c. c.
Amount of culture added to diluted disinfectant.	0.5 c. c. to 5.0 c. c.....	0.5 c. c. to 5.0 c. c.....	0.1 c. c. to 5.0 c. c.
Resistance of test culture to phenol (dilutions killing in 10 minutes but not in 5 minutes).	1-90	1-90 to 1-110.....	No limits stated.
Condition of tube in test.....	Plugged with cotton.....	Plugged with cotton.....	Open tubes.
Temperature of test.....	20° C.	15-18° C.	20° C.
Time intervals of the test....	5, 10, and 15 minutes.....	2½, 5, 7½, and 10 minutes...	5, 7½, 10, 12½, and 15 minutes.
Amount of medication mixture transferred (size of loop).	4 mm. loop (of No. 23 B. and S. gage wire).	4 mm. loop (of No. 27 Imperial gage wire).	Spiral loop (four spirals wrapped around a No. 13 B. and S. gage wire. Made of No. 23 B. and S. gage wire).
Calculation of phenol coefficient.	Highest dilution not killing in 5 minutes but killing in 10 minutes divided by same for phenol.	Highest dilution not killing in 5 minutes but killing in 7½ minutes divided by same for phenol.	Mathematical mean of highest dilutions showing no growth in 5, 10, and 15 minutes divided by same for phenol.

[1] Armour's, Special batch set aside for disinfectant testing.
[2] Allen and Hanbury's.

though two controls are used frequently as an additional check. This allows the use of nine dilutions of the unknown with 30-second intervals between transfers, or 14 when 20-second intervals are used. With a little practice, 20-second intervals allow sufficient time.

The F. D. A. method will be used by this laboratory in determining the dilutions at which miscible coal-tar disinfectants, and many other products to which the method is applicable, should be used for disinfecting purposes. As heretofore, this dilution should be at least equal in strength to a 5 per cent solution of phenol when tested against *Eberthella typhi* (20 times the phenol coefficient figure) and should be based on a phenol coefficient not higher than that obtained by the F. D. A. method.

FOOD AND DRUG ADMINISTRATION METHOD

THE test organism is a 22-26 hour culture of *Eberthella typhi* (Hopkins strain) incubated and grown in nutrient broth at 37° C. The broth contains the following ingredients: 5 gm. of Liebig's beef extract, 5 gm. of chemically pure sodium chloride, and 10 gm. of Armour's peptone (for disinfectant testing) in 1,000 c. c. of distilled water. The mixture is boiled for 20 minutes, made up to original weight (or volume) with distilled water, and adjusted with NaOH to pH 6.8 using the colorimetric method (3, p. 405-421). It is then filtered through paper, tubed (10 c. c. to each tube), and the tubes plugged with cotton and sterilized at 15 pounds pressure for 40 minutes. The test culture is transferred daily in this medium for not more than one month. At the end of each month, a fresh transfer is made from the stock culture. The stock culture is carried on agar slants of the same composition as the broth medium plus 1½ per cent Bacto-Agar (Difco), adjusted to pH 7.2 to 7.4. This medium is also filtered, tubed, plugged with cotton, sterilized, and slanted. The stock culture is transferred once a month, and the test organism is taken from the month-old stock culture. When the test organism has not been transferred daily, it is advisable to make four or five consecutive daily transfers in broth before using it for testing purposes, to be reasonably sure of its conforming to the phenol resistance requirements. When only one transfer has been skipped the following transfer from the 48-hour culture is usually satisfactory for use after 24 hours. Transfers are made with the platinum loop used in the test. Only cultures giving readings within the following limits are considered satisfactory:

Phenol	5 min.	10 min.	15 min.
1-90	+	+	0
1-100	+	+	+
or			
1-90	0	0	0
1-100	+	+	+

The following reading is that most usually obtained and is the most convenient:

Phenol	5 min.	10 min.	15 min.
1-90	+	0	0
1-100	+	+	+

PHENOL

The phenol used must meet the requirements of the United States Pharmacopoeia, and in addition the congealing point must not be below 40° C. A 5 per cent solution may be used as a stock solution if kept in a relatively cool place in well-stoppered amber-colored bottles protected from the light. This 5 per cent solution should be standardized with decinormal bromine (described under 'phenol" (10, *p.* 823), or with sodium bromide and bromate solution (9, *pp.* 404-405).

APPARATUS

Besides a number of accurately graduated pipettes, 100-c. c. glass-stoppered graduates or volumetric flasks are almost essential for the making of correct dilutions. All pipettes and graduates should be standardized. The test tubes for containing the dilutions should be large enough to permit transfers being made without touching the sides with the transfer needle. Lipped pyrex (to withstand constant flaming) test tubes 25 by 150 mm. serve very well as these seeding or medication tubes. A water bath for holding the dilutions at the desired temperature must be provided. To maintain the temperature practically constant dur-

ing the period of the test, the bath should be made so as to contain a relatively large volume per surface area, and should be insulated. The lid is made with well-spaced holes admitting the 25-mm. tube, but not the lip. The most convenient form of subculture tubes (tubes containing medium for incubating the tested organisms, as well as for growing the test culture) are ordinary non-lipped bacteriological test tubes 20 by 150 mm. The racks for holding the subculture tubes may be any convenient style. Blocks of wood with a series of holes bored in them are quite satisfactory. Dimensions depend somewhat on the size of the incubator, but the holes should be well spaced to insure quick selection and easy manipulation during the test. It is an added convenience to have the holes large enough to admit the medication tubes while dilutions are being made. The transfers are made with a 4-mm. (inside diameter) single loop of number 23 B. & S. gage platinum wire, 1½ to 3 inches long, set in a suitable holder such as an aluminum or glass rod approximately 0.5 cm. in diameter.

PROCEDURE

One per cent stock dilutions of the substance to be tested (or any other convenient dilution of the disinfectant, depending on the strength are made up, usually in the glass-stoppered cylinders or volumetric flasks from which the individual dilutions are then prepared. For rapid routine work, the final dilutions may be made directly in the medication tubes. In this case all excess over 5 c. c. must be removed. For more precise work and when high dilutions are required or volatile substances are dealt with, it is preferable to make up all of the dilutions in volumetric flasks and then transfer 5 c. c. of the final dilution to the medication tubes. These tubes containing 5 c. c. of each dilution (including the phenol control) are placed in the water bath at 20° C., for five minutes until the temperature of the bath is reached. Even slight variations in temperature may affect the results. The dilutions should cover the range of the killing limits of the disinfectant within 5-and 15-minute periods and should at the same time be spaced sufficiently close together to insure the desired accuracy. Five-tenths of a cubic centimeter of the test culture is then added to each of the dilutions at a time interval corresponding to the interval at which the transfers are to be made. Thus by the time 10 tubes have been seeded at 30-second intervals, four and one-half minutes will have elapsed and a 30-second interval intervenes before the transference to the subcultures is commenced. The culture is added from a graduated pipette holding sufficient culture to seed all the tubes in any one set. The pipette may be loosely plugged with cotton at the mouth end before sterilizing, as a precautionary measure. Unfiltered culture is used, but it should be thoroughly shaken 15 minutes before use and allowed to settle. The temperature of the culture should be practically that of the water bath before being added.

In inoculating the medication tubes they should be held in a slanting position, after removal from the bath, and the culture run in without the tip of the pipette touching the disinfectant. The tip may be allowed to rest against the side of the tube just above the surface of the liquid. The tubes are agitated gently but thoroughly after the addition of the culture to insure even distribution of the bacteria. Five minutes from the time of seeding the first medication tube, transfer 1 loopful of the mixture of culture and diluted disinfectant from the medication tube to the corresponding subculture tube. To facilitate transfer of uniform drops of the medication mixture, the loop is bent to form a slight angle with the stem and the medication tube is held at an angle of 60°. In other words, as the loop is withdrawn, its plane should be parallel with the surface of the liquid. At the end of 30 seconds, a loopful is transferred from subculture tube and the process continued for each successive dilution. Five minutes from the time of making the first transfer, a second set of transfers is begun for the 10-minute period and finally repeated for the 15-minute period. Before each transfer the loop is heated to red heat in the Bunsen flame and the mouth of every tube is flamed. Sterilization of the loop is effected immediately after making the previous transfer (before replugging the tubes) to allow time for sufficient cooling. Time does not permit flaming the tubes after making the transfer. For this reason, care in transferring and seeding is necessary. Due caution is observed to prevent either the seeding pipette or the transfer needle from touching the sides or mouth of the medication tube; neither should cotton threads be found adhering to the sides or mouth of these. After completion of the transferring, the subculture tubes are incubated at 37° C. for 48 hours and results read. Microscopic examinations usually suffices for this, but occasionally agglutination with antityphoid serum will aid in reading doubtful results. A 3-day incubation period or agar streak or microscopic examination may be resorted to in determining feeble growth. especially when organisms other than *Eberthella typhi* are used.

There are certain types of germicidal agents, such as many of the mercury compounds, which give very high results by phenol coefficient tests (8). Due to the high inhibitory value of such substances in preventing growth in the subcultures these figures are frequently misleading. For germicides used in the disinfection of such objects as surgical instruments, this is of particular importance and must be taken into account. Failure to appreciate this characteristic of certain compounds is much more likely to lead to error when *Staphylococcus aureus* is used rather than *Eberthella typhi* as the test organism. That false values may not be obtained for products of this type, or for any other disinfectant giving suspiciously high results, the subcultures should contain very large amounts of medium (not less than 200 c. c.) or they should be retransferred by carrying at least 4 loopfuls from the first subculture to a second tube of broth, as recommended by Shippen (8).

Other groups of disinfectants in common use, for which the phenol coefficient method of testing is not well adapted, are those compounds containing chlorine as the active agent as well as oxidizing agents in general. These are affected so materially by the pressure of organic matter that a phenol coefficient statement may grossly misrepresent their value under practical conditions of use and is very apt to be misleading to the consumer when placed on the label.

CALCULATION OF PHENOL COEFFICIENT

THE results of the test are expressed in terms of the phenol coefficient. This represents the germicidal value of the diluted disinfectant as compared with the diluted phenol control. It is a figure obtained by dividing the numerical value of the greatest dilution (the denominator of the fraction expressing the dilution) of the disinfectant capable of killing *Eberthella typhi* in 10 minutes but not in 5 minutes, by the greatest dilution of phenol showing the same results; that is, by the phenol control. Thus, if the results were as follows:

Disinfectant (X):

	5 min.	10 min.	15 min.
1-300	0	0	0
1-325	+	0	0
1-350	+	0	0
1-375	+	+	0
1-400	+	+	+
Phenol:			
1-90	+	0	0
1-100	+	+	+

The phenol coefficient would be $\frac{350}{90} = 3.89$

If none of the dilutions show growth in 5 minutes and killing in 10 minutes, the hypothetical dilution may be estimated in certain cases. This may be done only when any three consecutive dilutions show the following results:

The first, no growth in 5 minutes; the second, growth in 10 minutes but not in 15 minutes; and the third, growth in 15 minutes; for example:

If the results were as follows:

Disinfectant (X):

	5 min.	10 min.	15 min.
1-300	0	0	0
1-350	+	+	0
1-400	+	+	+
Phenol:			
1-90	0	0	0
1-100	+	+	0

the estimated phenol coefficient would be

$$\frac{325}{95} = 3.42$$

To avoid giving an impression of factitious accuracy, the phenol coefficient is calculated to the nearest 0.1 unless the coefficient is less than 1.0. Thus, in the examples cited above, the phenol coefficients would be reported as 3.9 and 3.4 instead of 3.89 and 3.42.

In the preceding description, *Eberthella typhi* has been mentioned as the test organism. Wherever any expression of phenol coefficient occurs in literature, on labels, etc., it is assumed to mean the *E. typhi* phenol coefficient, unless otherwise stated. It is, however, the distinct intention of this department not to limit the test to the use of one organism. In fact, the test has been found adaptable to the use of a wide variety of bacterial species in the determination of phenol coefficients. In cases where some of the more strictly parasitic bacteria are used, modifications in media are necessitated, and, of course, a change in the phenol dilutions. The writers are not in a position at this time to prescribe the limits of resistance for many of the organisms that might be used. Therefore discussion of the exact technic is here omitted, with the exception of that for *Staphylococcus aureus*. Suggestions for the use of certain representative types may, however, be found in a paper by Reddish (5). When any test organism other than *E. typhi* is used it should be distinctly designated when stating the phenol coefficient.

S. aureus has been found to be an extremely useful organism for testing disinfectants and antiseptics and has been used for this purpose for a number of years. When substituted in the above test the technic remains exactly the same. The phenol dilutions, however, must be changed. The resistance of any strain of *S. aureus* used in this test must come within the following limits: At 20° C. it must survive a 1-60 dilution of phenol for 5 minutes and a 1-70 dilution for 15 minutes. The following is the minimal resistance that would be acceptable:

Phenol:	5 min.	10 min.	15 min.
1-60	+	0	0
1-70	+	+	+

In the bacteriological examination of disinfectants, the *Eberthella typhi* and the *S. aureus* phenol coefficients give, in general, sufficient information to render tests with other organisms unnecessary, except in special instances. The commonly accepted criterion that disinfectants for general use be employed at a dilution equivalent to the germicidal efficiency of 5 per cent phenol against *E. typhi* (that is, 20 times the *E. typhi* phenol coefficient) allows a reasonable margin of safety for the destruction of infective agents likely to be the object of general disinfection about premises with the possible exception of *Mycobacterium tuberculosis*. *S. aureus*, due to it subiquity resistance and ever-ready tendency to cause infection, should always be employed in testing those substances recommended for personal use or as applications for wounds. If the disinfectant is recommended for use externally the temperature of the test should be 20° C., but where such substances are recommended for use in the body cavities, such as for mouth washes, gargles, douches, etc., this test should be conducted at 37° C. In such case the test should be designated "The F. D. A. method (special) *S. aureus*, 37° C." At body temperature the *S. aureus* should show the following resistance to phenol:

	5 min.	10 min.	15 min.
1-80	+	0	0
1-90	+	+	+

Or

	5 min.	10 min.	15 min.
1-80	+	0	0
1-90	+	+	0

The previous description of this method (5) differed from this only in allowing a slightly wider latitude in the resistance of the test organism against phenol.

OTHER TESTS FOR GERMICIDES[4]

THE limitations of the phenol coefficient make it necessary in some cases to judge the germicidal preparation by other tests or by additional tests. This is particularly true of preparations that are not completely soluble or miscible in water. It is also true of certain preparations designated as antiseptics.

Soluble antiseptics or antiseptics completely miscible with water can be tested, of course, by the procedure already described as the F. D. A. *Staphylococcus aureus* phenol coefficient method. In the testing of these substances, however, the phenol coefficient is not obtained necessarily, the phenol figure being used merely as a check of the resistance of the test organism. The information desired is the concentration which will kill in five minutes.

In an effort to stimulate practical conditions, it is frequently advisable to conduct the tests in the presence of blood serum. Sterile horse serum in a concentration of 10 per cent is ordinarily used, both in the germicidal and inhibitory tests. Special claims and uses of a product, however, frequently indicate the desirability of a higher concentration of this organic enrichment.

The following methods designed for the testing of insoluble and immiscible products are in use in this laboratory at the present time. Some of them have been used for years and have been described previously (6). Laboratory tests, of course, cannot duplicate the exact conditions found in practice. The procedures here outlined, however, are as close an approach to practical conditions as is feasible in routine laboratory tests, and reveal the obviously useless preparations. It should be noted that inhibitory tests are considered along with other facts in interpreting whether or not the substance will be of value in practical use. It must be remembered that not only bacteriological but physiological and pharmacological facts frequently must be taken into consideration in judging many substances.

THE WET FILTER-PAPER METHOD

The wet filter-paper method is a germicidal test rather than a test of inhibitory properties. It is used when the substance to be tested is not soluble or completely miscible with water, or for substances that are to be used in high concentration, such as soaps, tooth pastes, suppositories, dyes, dusting powders, salves, and ointments. If the substance is to be used in the body cavaties the test is carried out at 37° C.; if not, the test is carried out at 20°, or at room temperatures, and the temperature is recorded.

No. 2 Whatman filter paper is cut into pieces about 0.5 cm. square, and sterilized in a plugged test tube at temperatures below 170° C. to prevent charring. A suitable number of the paper squares are then impregnated with *Staphylococcus aureus*, or other test organisms, by immersion in a 24-hour broth culture of the organism. The culture must have the standard resistance required for phenol coefficient testing. The wet inoculated squares are then placed in the liquid or solid substance to be tested in such a way as to be completely covered and in intimate contact. At the end of 5 minutes, 10 minutes, 15 minutes, or 1 hour, or any other desired length of time, the wet papers are removed with a sterilized, stiff, platinum wire bent at a sharp angle to form a hook and placed in 10 c. c. of sterile broth. After as much of the disinfectant as possible has been removed (in the case of sticky substances, the needle must be used to aid in freeing the squares of adherent germicide) the squares are retransferred to a fresh tube of sterile broth (10 c. c.) and the tubes incubated at 37° for 48 hours, when they are observed for evidence of growth.

It will be noted that in this test resubcultures are always required, since the first tube of broth to which the filter-paper squares have been added frequently contains sufficient antiseptic to exhibit inhibition of growth. Both tubes of broth are usually incubated.

THE DRY FILTER-PAPER METHOD

The dry filter-paper method is used in tests of fumigants and of oils that are to

[4] According to current usage the word "antiseptic" has two meanings; to kill bacteria or to prevent their growth, depending upon the use of the product. Products such as salves, ointments, and dressings that remain in contact with the body for long periods of time, may be designated properly as antiseptics if they inhibit the growth of bacteria. On the other hand, mouth washes, douches, gargles, and preparations of like nature are in contact with the body for but brief periods of time and exert negligible inhibitory action. These may be described properly as antiseptics only if they will destroy bacteria under the conditions of use; that is, in the dilutions recommended and in a period of time comparable to that in which they would have an opportunity to act when used as directed.

be used where moisture is absent. It is similar to the wet filter-paper test, squares of paper being used that have been impregnated as described under the test above, except the squares are dried for two days in a sterile Petri dish in the 37° C. incubator. This test can be used successfully only with organisms capable of resisting the drying. *Eberthella typhi* will not withstand the drying. In the writers' work *Staphylococcus aureus* is the usual test organism. The inoculated dried paper squares may be used at any time after drying up to 30 days, but the resistance of the organism at no time should fall so low that it is incapable of withstanding a 1-80 dilution of phenol for five minutes at 20°. It should be noted that control tests with non-medicated squares should always be carried out to test the viability of the test organism. As in the wet filter-paper method, resubcultures are always necessary.

THE AGAR-PLATE METHOD

The agar-plate method is a test for inhibitory properties and is used for substances remaining in contact, with the body in the absence of serous body fluids. Examples of substances which may be tested by this method are salves, dusting powders, creams, plasters, pads, adhesive tape, catgut, and suppositories. The test organism ordinarily used is *Staphylococcus aureus*, but for special purposes the test may be used with any organism capable of growing on agar. The agar is of the same composition as that previously described for carrying stock cultures of the test organism.

Fifteen to twenty cubic centimeters of agar is melted and cooled to 42°-45° C. To this is added 0.1 c. c. of a 24-hour broth culture of the test organism. The inoculated agar is then poured into a sterile Petri plate and allowed to harden. As soon as the agar has hardened, the test substance is placed in intimate contact with the surface of the agar. If a salve, it is first warmed just sufficiently to soften it and thus secure a complete peripheral contact. As a control, warmed sterile petrolatum may be placed on another portion of the plate. The plates are incubated 24-48 hours under unglazed porcelain tops at 37° C. and then are examined for evidence of inhibition. If the preparation is antiseptic or inhibitory, a zone of clear agar will be noted around the place where the substance has been in contact and the width of the zone will indicate the diffusibility of the inhibitory (antiseptic) agent. If there is no inhibition, growth of the test organism will be

[6] The authors are indebted to L. C. Himebaugh for this method.

[8] In the cases where chlorine compounds are used for this purpose the effectiveness is usually judged on the basis of "available" chlorine content.

[7] Intestinal antiseptics do not readily lend themselves to laboratory tests. When medical opinion concerning the physiological and therapeutic properties of such preparations is to be confirmed by the results of bacteriological tests, the products may be considered to be germicidal only when tested in the presence of liberal amounts of organic matter, such as saliva, feces, etc.

METHOD APPLICABLE IN A GIVEN CASE

Substance	*Method Applicable*
Soluble disinfectants:	
A. Preparations for general use.	Phenol coefficient—*E. typhi* at 20° C.
B. Preparations for antiseptic use.	Phenol coefficient technic—*S. aureus* 20° C. or 37° C. as outlined.
C. Preparations for surgical use.	Phenol coefficient technic—*S. aureus* 20° C.
Insoluble and concentrated disinfectants:	
A. Preparations for general use (oils, tarry substances, powders, lime, etc.)	Wet filter paper—*E. typhi* and *S. aureus*. Room temperature.
B. Preparations for use on dry surfaces (spraying oils, sweeping compounds, powders, lime).	Dried filter paper—*S. aureus*. Room temperature.
C. Preparations for fumigation (filter paper and exposed to gas in confined space).	Wet filter paper—*E. typhi* and *S. aureus;* room temperature. Dried filter paper—*S. aureus;* room temperature. (Extension of time may be indicated).
Soluble and liquid antiseptics:	
A. Preparations to be applied for a short time (washes, mouth washes, gargles, douches, etc.).	Phenol coefficient technic—*S. aureus* 20° C. or 37° C. as indicated.
B. Preparations for use on open wounds, etc. (washes).	Phenol coefficient technic—*S. aureus* 20° C. or 37° C. as indicated (Tested in presence of 10 per cent serum.)
C. Preparations remaining on site of application (dyes, wet dressings, rubbing preparations, etc.).	Agar cup-plate.
D. Preparations for use on open wounds, etc. (dyes, wet dressings, etc.).	Serum agar cup-plate.
E. Preparations remaining on site of application but claiming germicidal properties.	Wet filter paper—*S. aureus* 37° C. Extension of time may be indicated.
Solid soluble antiseptics:	
A. Lozenges, tablets, etc.	Wet filter paper—*S. aureus* 20° C. or 37° C. as indicated. Note: Saturated aqueous solution or in dilution indicated.
Insoluble and concentrated antiseptics:	
A. Preparations remaining on site of application (dusting powders, ointments, salves, suppositories, plasters, dressings, etc.).	Agar plate.
B. Preparations remaining on site of application but claiming germicidal properties.	Wet filter paper—*S. aureus* 37° C. Extension of time may be indicated.
C. Preparations for use on open wounds, etc.	Serum agar plate.
Antiseptic materials, appliances, etc.:	
A. Bandages, dressings, catgut, etc.	Serum agar plate.
B. Tape, pads, etc.	Agar plate.
Solid and semisolid antiseptics:	
A. Preparations used for a short time (soaps, soap powders, tooth pastes, tooth powders, etc.).	Wet filter paper—*S. aureus* 20° C. or 37° C. as indicated. (Note: Undiluted and diluted with equal parts water or diluted with sufficient water to form a thick paste or heavy emulsion.)
Disinfectants and antiseptics for use in the absence of organic matter:	
A. Preparations for drinking water.[8]	Phenol coefficient technic—*E. typhi* 20° C. (Note: 0.1 c. c. of culture to 10 c. c. of diluted preparation.)
Intestinal antiseptics.[7]	

(5 c. c. of disinfectant + 95 c. c. of distilled water = solution A)

Dilution	*Solution A* C. c.		*Distilled water* C. c.		*Solution A* C. c.		*Distilled water* C. c.		*Solution A* C. c.		*Distilled water* C. c.
1:20	= 20	+	0	or	10	+	0	or	4	+	0
1:25	= 20	+	5	or	10	+	2½	or	4	+	1
1:30	= 20	+	10	or	10	+	5	or	4	+	2
1:35	= 20	+	15	or	10	+	7½	or	4	+	3
1:40	= 20	+	20	or	10	+	10	or	4	+	4

1:45	=	20	+	25	or	10	+	12½	or	4	+	5
1:50	=	20	+	30	or	10	+	15	or	4	+	6
1:55	=	20	+	35	or	10	+	17½	or	4	+	7
1:60	=	20	+	40	or	10	+	20	or	4	+	8
1:65	=	20	+	45	or	10	+	22½	or	4	+	9
1:70	=	20	+	50	or	10	+	25	or	4	+	10
1:80	=	20	+	60	or	10	+	30	or	4	+	12
1:90	=	20	+	70	or	10	+	35	or	4	+	14
1:100	=	20	+	80	or	10	+	40	or	4	+	16
1:110	=	20	+	90	or	10	+	45	or	4	+	18
1:120	=	20	+	100	or	10	+	50	or	4	+	20
1:130	=	20	+	110	or	10	+	55	or	4	+	22
1:140	=	20	+	120	or	10	+	60	or	4	+	24
1:150	=	20	+	130	or	10	+	65	or	4	+	26
1:160	=	20	+	140	or	10	+	70	or	4	+	28
1:170	=	20	+	150	or	10	+	75	or	4	+	30
1:180	=	20	+	160	or	10	+	80	or	4	+	32
1:200	=	20	+	180	or	10	+	90	or	4	+	36
1:200	=	20	+	180	or	4	+	36	or	2	+	18
1:225	=	20	+	205	or	4	+	41	or	2	+	20½
1:250	=	20	+	230	or	4	+	46	or	2	+	23
1:275	=	20	+	255	or	4	+	51	or	2	+	25½
1:300	=	20	+	280	or	4	+	56	or	2	+	28
1:325	=	20	+	305	or	4	+	61	or	2	+	30½
1:350	=	20	+	330	or	4	+	66	or	2	+	33
1:375	=	20	+	355	or	4	+	71	or	2	+	35½
1:400	=	20	+	380	or	4	+	76	or	2	+	38
1:450	=	20	+	430	or	4	+	86	or	2	+	43
1:500	=	20	+	480	or	4	+	96	or	2	+	48

(1 c. c. of disinfectant + 99 c. c. of distilled water = solution B)

Dilution	*Solution B C. c.*		*Distilled water C. c.*		*Solution B C. c.*		*Distilled water C. c.*		*Solution B C. c.*		*Distilled water C. c.*
1:100	= 100	+	0	or	10	+	0	or			
1:100	= 100	+	10	or	10	+	1	or			
1:120	= 100	+	20	or	10	+	2	or			
1:130	= 100	+	30	or	10	+	3	or			
1:140	= 100	+	40	or	10	+	4	or			
1:150	= 100	+	50	or	10	+	5	or			
1:160	= 100	+	60	or	10	+	6	or			
1:180	= 100	+	80	or	10	+	8	or			
1:200	= 100	+	100	or	10	+	10	or	4	+	4
1:225	= 100	+	125	or	10	+	12½	or	4	+	5
1:250	= 100	+	150	or	10	+	15	or	4	+	6
1:275	= 100	+	175	or	10	+	17½	or	4	+	7
1:300	= 100	+	200	or	10	+	20	or	4	+	8
1:325	= 100	+	225	or	10	+	22½	or	4	+	9
1:350	= 100	+	250	or	10	+	25	or	4	+	10
1:375	= 100	+	275	or	10	+	27½	or	4	+	11
1:400	= 100	+	300	or	10	+	30	or	4	+	12
1:400	= 10	+	30	or	4	+	12	or	2	+	6
1:450	= 10	+	35	or	4	+	14	or	2	+	7
1:500	= 10	+	40	or	4	+	16	or	2	+	8
1:550	= 10	+	45	or	4	+	18	or	2	+	9
1:600	= 10	+	50	or	4	+	20	or	2	+	10
1:650	= 10	+	55	or	4	+	22	or	2	+	11
1:700	= 10	+	60	or	4	+	24	or	2	+	12
1:750	= 10	+	65	or	4	+	26	or	2	+	13
1:800	= 10	+	70	or	4	+	28	or	2	+	14
1:850	= 10	+	75	or	4	+	30	or	2	+	15
1:900	= 10	+	80	or	4	+	32	or	2	+	16
1:900	= 5	+	40	or	4	+	32	or	2	+	16
1:1,000	= 5	+	45	or	4	+	36	or	2	+	18
1:1,100	= 5	+	50	or	4	+	40	or	2	+	20
1:1,200	= 5	+	55	or	4	+	44	or	2	+	22
1:1,300	= 5	+	60	or	4	+	48	or	2	+	24
1:1,400	= 5	+	65	or	4	+	52	or	2	+	26
1:1,500	= 5	+	70	or	4	+	56	or	2	+	28
1:1,600	= 5	+	75	or	4	+	60	or	2	+	30
1:1,700	= 5	+	80	or	4	+	64	or	2	+	32
1:1,800	= 5	+	85	or	4	+	68	or	2	+	34
1:2,000	= 5	+	95	or	4	+	76	or	2	+	38
1:2,200	= 5	+	105	or	4	+	84	or	2	+	42
1:2,400	= 5	+	115	or	4	+	92	or	2	+	46
1:2,600	= 5	+	125	or	4	+	100	or	2	+	50
1:2,800	= 5	+	135	or	4	+	108	or	2	+	54
1:3,000	= 5	+	145	or	4	+	116	or	2	+	58
1:3,200	= 5	+	155	or	4	+	124	or	2	+	62

observed adjacent to and even under the test substance.

THE SERUM AGAR-PLATE METHOD

Preparations recommended for use on open wounds, cuts, etc., will be effective only if they exhibit activity in the presence of serous fluids. In testing such preparations the agar-plate method is modified by the addition of 10 per cent sterile horse serum to the agar.

THE AGAR CUP-PLATE METHOD[2]

The agar cup-plate method is merely a variation of the agar-plate method. It is to be used on products liquid at the temperature of the test. The agar or serum agar is inoculated as in the agar-plate method. Before the agar cools, a depression or cup is made in the medium by standing a sterile flat-bottomed glass tube, 1.5 cm. in diameter, in the liquefied agar. On hardening, the glass tube is removed by slightly twisting and pulling at the same time. Insertion of a sterile wire down the side of the tube for the introduction of air will eliminate much of the cracking of the agar. Another method of preparing the agar cup-plate is to allow the medium to harden and then cut out a disk in the agar, by means of a cork borer, 1.5 cm. in diameter. One or two drops of melted agar are placed in the cup to seal cracks or crevices. After the agar cup-plate is prepared, 6 drops of the liquid to be tested are placed in the cup and the plate incubated under an unglazed porcelain top for 24 to 48 hours. If there is a clear zone about the cup, the substance under test has inhibitory properties. Here, as well as in the agar-plate test, the agar in the clear zone may be tested for growth by subculture in broth to indicate whether the action is germicidal or merely inhibitory.

TESTS IN THE PRESENCE OF ORGANIC MATTER

In general, the tests outlined above will take care of the bulk of the preparations coming to this laboratory. However, special tests may be required to determine the value of products recommended for certain purposes. For instance, recommendations on the label may make advisable the use of various additions of organic matter, such as increased amounts of peptone or the addition of gelatin, blood ascitic fluid, saliva, urine, or feces, depending upon the information desired.

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A. General Requirements

1. The material shall be suitable for application to new Maple, Beech and Birch flooring or to such flooring which has been in service.

2. The presence of waxes will be permitted within the limits of the detailed requirements.

B. Detailed Requirements

1. The material shall not contain more than 1.0 per cent of water unless it is an emulsion of adequate stability in which case the water shall be the dispersed phase.

2. The material shall not contain more than 0.1 per cent of suspended inorganic matter.

3. The flash point of the material shall not be under 100° F.

4. The material shall contain not less than 28 per cent by weight of non-volatile matter.

5. The film formed by the material, when thoroughly dried, shall not be brittle.

6. The film formed by the material, when thoroughly dried, shall be resistant to abrasion.

7. The film formed by the material, when thoroughly dried, shall be resistant to cold water.

8. The material when applied according to the directions of the manufacturer shall not markedly darken the wood.

9. The material when applied according to the directions of the manufacturer and allowed to dry in the air for 24 hours, shall not be slippery, sticky or gummy.

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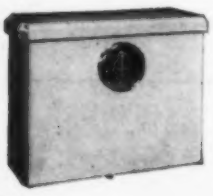

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Soap Buying Habits

A study of soap preferences in the Milwaukee market for 1944

SOAP buying habits in the Milwaukee market are checked annually by the *Milwaukee Journal*. Reflecting as they do the buying policies of a representative cross-section of the American public, they give some idea of the national urban market for soaps and allied products. The following figures, taken from the 1944 survey, give the percentage of families in the district using each product, and the brands preferred by the largest percentage of Milwaukee residents.

Toilet Soap for Hands and Face

used by 99.4% of reporting families.
Leading sellers:

"Lux"	24.5%
"Sweetheart"	19.3%
"Ivory"	14.7%

Toilet Soap for Bath

used by 99.4% of reporting families.
Leading sellers:

"Lifebuoy"	22.4%
"Ivory"	18.6%
"Lux"	17.7%

Tooth Paste

used by 59.2% of reporting families.
Leading sellers:

"Colgate"	27.8%
"Pepsodent"	25.7%
"Ipana"	14.7%

Shaving Cream

used by 37.3% of reporting families,
Leading sellers:

"Palmolive"	33.6%
"Lifebuoy"	13.4%
"Williams"	13.1%

Tooth Powder

used by 55.4% of reporting families.
Leading sellers:

"Dr. Lyon's"	44.5%
"Pepsodent"	15.8%
"Colgate's"	12.2%

Brushless Shaving Cream

used by 23.3% of reporting families.
Leading sellers:

"Burma Shave"	17.1%
"Palmolive"	15.8%
"Barbasol"	14.8%

Toilet Bowl Cleansers

used by 63.5% of reporting families.
Leading sellers:

"Sani-Flush"	48.6%
"Bowlene"	39.1%
"Vanish"	6.8%

Liquid Shampoos

used by 63.4% of reporting families.
Leading sellers:

"Drene"	33.3%
"Fitch's"	22.3%
"Halo"	8.3%

Scouring Cleansers

used by 97.8% of reporting families.
Leading sellers:

"Kitchen Klenzer"	34.4%
"Old Dutch"	25.2%
"Bab-O"	11.8%

Liquid Dentifrices

used by 18.2% of reporting families.
Leading sellers:

"Teel"	83.9%
"Craig-Martin"	8.7%
"Pepsodent"	5.5%

Cleaning Products

used by 73.8% of reporting families.
Leading sellers:

"Badger Master Craft"	17.9%
"Climalene"	14.4%
"Soilax"	14.2%

Soaps for Fine Fabrics

used by 99.7% of reporting families.
Leading sellers:

"Lux Flakes"	43.8%
"Ivory Flakes"	20.1%
"Ivory Bar"	10.8%

Soap Products for Dishes

used by 99.6% of reporting families.
Leading sellers:

"Ivory Bar"	23.3%
"Duz"	11.9%
"Ivory Flakes"	10.3%

Soaps for Household Laundry

used by 99.7% of reporting families.
Leading sellers:

"Fels Naptha Bar"	21.6%
"Oxydol"	18.5%
"Rinso"	15.5%

Bottled Bleaching Fluid

used by 80% of reporting families.
Leading sellers:

"Hilex"	40.1%
"Mag"	12.2%
"Fleecy White"	9.4%

"Soap and Sanitary Chemicals" Index

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APPROXIMATE CONSTANTS OF SOAP OILS

Oil or Fat	Sp. Gr. (Water at 15°)	Sap. No.	Iodine Value	Titer °C.	% Non-Sap.
Castor Oil	0.958—0.968	177—187	83— 86	3°—	0.3—0.5%
Coconut Oil	0.926	251—263	8— 10	20°—23°	0.2
Corn Oil	0.921—0.927	186—193	120—130	15°—19°	1.5—3.0%
Cottonseed Oil	0.915—0.926	191—196	103—115	32°—38°	0.7—1.6%
Linseed Oil	0.931—0.938	189—196	170—204	19°—21°	0.5—1.6%
Olive Oil Foots	0.914—0.919	189—195	79— 86	17°—21°	2.0—3.0%
Palm Oil	0.921—0.925	196—205	48— 58	42°—45°	0.7—1.0%
Palm Kernel Oil	0.873/99°	244—255	16— 23	20°—25°	0.2—0.5%
Peanut Oil	0.911—0.926	185—192	83— 95	28°—30°	0.5—1.0%
Sesame Oil	0.920—0.926	188—193	103—115	21°—24°	1.0—1.8%
Soya Bean Oil	0.922—0.925	191—194	125—140	21°—24°	0.3—0.6%
Tallow (beef)	0.943—0.952	193—200	35— 47	43°—45°	
Whale Oil	0.922—0.926	188—194	110—150	22°—24°	1.0—3.0%

FATTY ACIDS IN SOAP OILS

Glycerides of Acids	Coconut Oil	Corn Oil	Cottonseed Oil	Linseed Oil	Olive Oil	Palm Oil	Palm Kernel Oil	Peanut Oil	Sesame Oil	Soyabean Oil	Tallow	Whale Oil
Arachidic	—	0.4	0.6	—	0.2	—	—	3.6	4.0	0.7	—	—
Lignoceric	—	0.2	—	—	—	0.1	—	2.9	0.4	0.1	—	—
Linolenic	—	—	—	34.1	—	—	—	—	—	2.2	—	—
Linoleic	—	39.1	42.0	48.5	3.9	9.5	1.0	23.1	35.2	49.3	—	20.0
Myristic	20.0	—	0.4	—	Trace	0.6	16.0	—	—	—	2.0	8.0
Oleic	2.0	43.4	35.0	5.0	83.1	43.2	16.5	56.7	46.0	32.0	44.5	25.0
Palmitic	7.0	7.3	20.0	2.7	9.2	44.0	6.5	7.3	7.3	6.5	29.0	12.0
Palmitoleic	—	—	—	—	—	—	—	—	—	—	—	17.0
Stearic	5.0	3.3	2.0	5.4	2.0	2.9	1.0	5.5	4.4	4.2	24.5	—

Coconut oil also contains 10% Capric, 2% Caproic, 9% Caprylic and 45% Lauric. Palm Kernel Oil contains 6% Capric, 3% Caprylic and 50% Lauric. Whale Oil contains 18% Clupandonic.

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